



VOL. 45, No. 3

MARCH 1977

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COVER PHOTO

Popular place for enthusiasts and the interested alike at the 11th Australian Scout jamboree at Rossmore Park, Dandenong, for the first week in January, was the amateur radio marquee.

With several rigs operating at once, it was a busy spot. At the time this picture was taken, the Scouts had made 35 overseas contacts from VK8BSA/Portable.

Pictured, from left: Mike Thorne (VK3ZVN) of Nunawading, an instructor for the Blackburn Scout Radio Club, sitting in the chair; Rover Scout Bruce Kendall of Mt Warraba (VK3ZDM) with microphone, and Scout Antony Perri, 14, of 2nd Templestowe, a fascinated observer.

(See page 13.)

Photo by
ROBERT L. SUGGETT
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amateur radio

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EDITOR:

BRUCE BATHOLDS* VK3JUV

ASSISTANT EDITOR:

RON COOK* VK3AFW

TECHNICAL EDITORS:

BILL RICE* VK3ABP

GILL SONES* VK3AJU

KEN PALLISER VK3GJ

CONTRIBUTING EDITORS:

BRIAN AUSTIN VK5CA

RODNEY CHAMPNESS* VK3UG

DAVID DOWN VK5MP

RON FISHER* VK3OM

DAVID HULL VK3DH

ERIC JAMIESON VK5LP

KEN JEWELL VK3ZNU

PETER MILL VK3ZPP

KEVIN PHILLIPS VK3AUG

LEN FOYSTER* VK3ZGP

DRAFTING:

ALL DISTRICTS DRAFTING SERVICE

KEN GILLISPIE* VK3GK

PHOTOGRAPHER:

REG GUDGE —

BUSINESS MANAGER:

PETER DODD VK3OIF

EDITORIAL CONSULTANT:

BILL ROPER VK3ARZ

ADVERTISING REPRESENTATIVE:

TOM COOK

***Member of Publications Committee**

Enquiries and material to:

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QSP WHAT DOES THE "CB" REPORT* SAY ABOUT THE AMATEUR SERVICE?

1. Radio Spectrum management is a complex matter. It is a limited resource and therefore is controlled internationally. It must be conserved by efficient planning. Australia is a major user of the spectrum.
2. No allocations are made without a need being demonstrated. Nothing has been provided for unskilled people for hobby or general conversation purposes (para. 41).
3. The Amateur Service exists for those who have a hobby interest. Genuine seekers after knowledge can obtain a Novice licence. The examination syllabus is subject to continuing review to ensure that the standard remains appropriate to the needs of the Service (para. 42).
4. The Australian administration is now largely powerless to take action against illegal operators (para. 57). Only 6 of the 148 ITU member countries have a CB Service (para. 56).
5. DXing attractive to CB-ers when the ship is right (para. 67). Major difficulty in establishing a CB service using the 23 USA CB channels is that radio amateurs in Australia and New Zealand are permitted the use of the 11 m band.
6. Para. 82 states the WIA made strong representations to reserve inviolate all the amateur bands and is opposed to giving up any portion of the 11 m band (NOTE: What the WIA said was correctly reported in *WIA NEWS* in AR for November 1976).
7. As propagation is now poor there is minimum use of 11 m by amateurs for DX. As sun spot cycle progresses 11 m will be used more by amateurs than now (para. 53/54).
8. WIA opposes sterilising 11 m band (para. 87). (NOTE: See 6 above.)
9. A CB Service is not designed for DX operations. The Amateur Service caters for this kind of activity (para. 106).
10. Three options were proposed. Modify existing services, use USA CB frequencies or use UHF.
11. Amateur radio operators are regarded as responsible users of their allocated frequencies. The service in Australia is largely self-policing (Appendix C, para. 9).

The Executive.

*"Report to the Minister for Post and Telecommunications on the Introduction of a Citizen Band Radio Service in Australia" released January 1977.

QSP

SECONDS GET LONGER

The International Time Bureau (BIM) has announced that the rate of UTC (UTC replaced GMT) will be decreased by 1 in one million million on January 1 1977. This is necessary (or so the AR statistician claims) to prevent the international clocks being 1 second fast at 20 h 53 m, February 1 in the year 33,665 AD.

PENSIONERS

Please remember that if you wish to apply for re-grading as a pensioner this must go direct to your Division. Only the Divisions can approve pensioner rates in respect of their members, so please write them enclosing a photocopy of any appropriate document. Since there could be delays in dealing with applications anyone likely to be affected should pay the appropriate pension grade rate (see January AR, p. 3), if any, to Toorak, to keep AR coming. Unless advice is received that a member has been re-graded as a pensioner the subscription notice for the following year will automatically show a debit for this year plus the full rate for that year.

W. MALAYSIAN REPEATER

MARTS newsletter for October '76 reports that approval has been obtained for their 2m repeater frequencies as 147.9 MHz out, 147.3 MHz in. Work is now going ahead to determine the most suitable equipment. The location is given as Ulu Kali.

NES RADIO STATIONS WWV AND WWVH

Effective February 1 1977, broadcasts will be discontinued on 20 and 25 MHz from WWV and 20 MHz from WWVH. The 2.5 MHz broadcast from WWV will not be discontinued as previously proposed. Services will continue with no changes on 2.5, 5, 10, and 15 MHz from both stations.

JOTA

"I have heard amateur operators commenting on air of another problem they seem to be encounter-

ing with increasing frequency. This is that Scouters set up the arrangements for the amateur to operate his gear at the local Scout hall and, having delivered his boys to the den to participate in the event, the Scoutmaster then departs and leaves his members solely in the charge of the amateur radio operator. In one instance an amateur had to leave hurriedly in the middle of a contact to deal with an emergency in the grounds of the Scout den. He could have lost his gear as well as the den in which it was located during the resulting crisis. I believe all Scouters must take steps to ensure that participating Scouts are always under the control of a responsible Scoutmaster, leaving the amateur operator free to concentrate on the job of making radio contacts for the enjoyment of the Scouts taking part." From Report on 18th JOTA to the Scout Association of Australia, which also included sincere thanks to radio amateurs for their contributions to JOTA.

TEACHER'S NOTES

Roger Davis VK4AAR has prepared a most useful and comprehensive set of teacher's program notes for a one year course leading to the Novice licence. The course is in three stages. There is another course leading to the ADOP. The notes for the elementary introduction to the first course were submitted for publication in AR. Unfortunately they run to some 11 pages and could not be compressed to less than 5 in the magazine. This would be too much as space is at a premium and the number of teachers requiring guiding notes represent a very small number of the total readers. However, if you, or someone you know, would like a copy of Roger's notes why not write to him at 2/3 Farrington Street, Alderley, Qld. 4051.

AX CALL PREFIXES

Why not use your AX prefix throughout the month of March and therefore gladden the hearts of prefix hunters.

WIANEWS

This month WIANEWS departs from normal reporting and instead, offers you the basic texts of the four segments of Federal tapes broadcast during February.

1296 MHz WORLD RECORD SHATTERED

"Firstly a world record contact—subject to confirmation. This took place on the 23 centimetre band on the morning of Tuesday, 25th January, at 09 hundred hours West Australian time between Wally VK6WG in Albany and Reg VK5QR in Enfield, a suburb of Adelaide.

The approximate distance is 1886 kilometres or about 1172 miles. Wally's rig was on 1296.111 MHz and Reg's about 50 kHz lower in frequency. Wally gave Reg's SSB signal strength 5 readability 4 and received from Reg a 5 4 3 for his CW which was verified later as 5 4 7 because of a tone variation in Reg's receiver. Wally tried AM but Reg could copy only the occasional word because of the passband on his receiver.

As far as can be ascertained the existing world record on this band was set up on 26th October 1973 between WA2LTM and W9WCD over a distance of 1240 kilometres. Official confirmation of this new record will be conveyed to all the major amateur radio societies as early as possible.

Wally's rig was a crystal oscillator on 8000.017 kHz to a 5763/6BQ5/6BW6/832 line up with output on 144 MHz followed by an 832 tripler to 432 MHz and a 3CX100A5 tripler to 1296 all home brewed. The final ran 500 volts at 65 mA, giving 32 watts input and about 10 to 15 W on 1296. The modulator was 807's in AB1. The antenna was a 3 foot dish made up according to specifications in the RSGB's VHF/UHF Manual. The receiver front end was one which came from Ken VK3AKC into a microwave module 1296-281F thence into an FTDX 100.

Reg writes that his gear to generate SSB was an experimental hook-up of the circuit suggested by Karl Meinzer DJ4ZC. In 1970. In this, you process the SSB signal to eliminate most of the distortion caused by tripling. The home-brew 9 MHz signal, mixed to 28 MHz, was fed into his normal home-brew 432 MHz transverter to a 2C39A amplifier and then through a varactor tripler to 1296 MHz. The power output was about 10 W to a 3 foot dish. The receiver was a mixer only converter but he says he did include a pre-amp between it and the converter tunable IF, the 101B receiver.

At both ends of the contact there were participating observers and much of the contact was tape recorded by Wally. It is more than likely that the two observers, Roger VK5NY and Bernie VK6KJ, were themselves green with envy about the contact as Roger himself made a recording at his own QTH but was unable to get his signals through to VK6.

This contact was the culmination of previous contacts on 144 and 432 MHz with all four stations being involved. Reg apologized for the tone reports he gave but said he had dropped the 28 MHz pre-amp in his excitement!!!

The Federal President sent telegrams of congratulations and many members will wish to add their praise perhaps bearing in mind the considerable number of stations further east than Adelaide equipped with 23 centimetre capability. Perhaps therefore the record could be bettered in the near future.

The second item of good news was that replies were received at last from central office on a number of outstanding questions. At least a few gains were recorded. Details will be found in WIANEWS in AR for February.

CB

The issue, late in January, by the Minister of the discussion paper on the future of citizens band radio in Australia should indeed produce a wealth of discussion.

In 1974 the Wireless Institute wrote to the then Postmaster-General expressing opposition to the establishment of a radio communication service for or on behalf of unqualified persons under uncontrolled conditions.

The Minister replied that his Department considered it would not be in the public interest to provide for the operation of a citizens radio service in this country. This was based, he wrote, largely on the experiences of overseas countries on this question.

He also said that the introduction of the proposed Novice amateur licence would help to alleviate the problem. The correspondence appeared in full in AR of October 1974 and listeners are asked to study the wording rather carefully before coming out with comments at variance with the facts.

The Minister assured the Institute as late as March last year that the Government did not contemplate changing the long-standing policy adopted in relation to the operation of a CB service in Australia. Please see Amateur Radio Journal for May 1976, page 4.

WIANEWS in the June 1976 issue reported that the Minister had been asked if there was any intention by the Government to restrict or prohibit the importation, sale or disposal of the equipment commonly used by illegal operators. Only an acknowledgement was received.

In AR for last November, page 5, WIANEWS reported a further approach to the Minister that if the 11 metre band is withdrawn from the amateur service in Australia Novice Licences would lose 66 per cent of the frequencies allocated to them. Members will remember that ever since 1972 the Institute has been pressing Central office for the Novice Segment of 28.1 to 28.3 MHz.

Views about a citizens band service reflect quite a variation. Officially there is no policy laid down by the Federal Council concerning the concept of a citizens band service. This was clearly stated by the Federal President in his editorial for the November 1976 issue of Amateur Radio. He said that the Wireless Institute has a duty to look after the interests of the licensed amateur and those who wish to obtain a licence. In this context the well-informed member will have read the views of the Radio Society of Great Britain on CB. These were published in Amateur Radio for November 1976 under IARU News on page 18. Also remember that the Institute has listened to the views of prospective CB-ers. Have a look at the first few paragraphs on page 4 of that AR.

Why quote all this material? The reason is very simple. To show the consistency of thought on the subject over quite a period of time and to ask that those who criticize should first inform themselves on the many aspects involved.

One prominent radio club last October passed a motion that the attitude of the Wireless Institute in respect of citizens band operation should be modified and that positive efforts should be made to assist would-be-users in their attempts to secure wider and more legitimate operation in that service.

The club believed that the Institute's stance cannot remain substantially neutral. Ultimately, the writer said, the Institute will have to come out either for or against the aspirations of would-be citizens band users. In terms of future Institute membership it seemed to them more pragmatic to foster alliance with CB users than to oppose them or ignore their existence. It was pointed out that if CB became a reality a CB Association would be formed which would wield considerable influence. It was then asked if it would be any sacrifice if the Australian Amateur Service gave up its 27 MHz allocation to CB users.

The memorandum ended with a reference to a book clearly describing the demise of people and organisations who refuse to acknowledge change or who refuse to accommodate change. They end up as vegetables.

Another influential club adopted as official club policy that the CB service may be inevitable and agrees with the principle of a licensed CB service and supports its introduction. Their policy stated that the amateur should press for an increased allocation on other HF bands as compensation—preferably in the 160 and 40 metre bands—and that Novice operation be permitted on 160 metres and also on 160 metres if this band is extended.

Another group recommended the voluntary abandonment of the 11 metre band by amateurs in favour of a CB service.

Not too far distant, geographically, another influential group addressed the Minister on the lines that the introduction of CB on 27 MHz into this country would be a disaster and something the Government would live to regret. They wrote that there is no justification for this type of service into Australia as any person requiring communication is well catered for independent of his or her particular vocation. They pointed out that if pressures win out, many amateurs may well wonder if all their study and effort has been worthwhile or indeed necessary. They recommended that the present policy of not legalising CB operations should continue, but if this is beyond the Government, due to pressures by commercial financial interests, then the assignment of a part of the UHF spectrum should be granted so as to ensure restricted range and restricted usage by reason of extra cost. It is also stated that the Department has not and could not enforce any requirements because of staff shortages.

This group, and others, point to the development of open confrontation between licensed services, including amateurs, and the present illegal operators on the 27 MHz band who have in some cases threatened physical violence to legitimate users of the band.

One or two individuals and groups have done their utmost to have the amateur case, as they see it, published by the media. They have not been particularly successful.

One writer wrote that Government and Departmental procrastination and the slow processes of the law, have allowed the situation to develop almost to the point of no return. He refers extensively to the chaotic situation in the USA which must not be allowed a foothold in Australia. Other writers pointed out the relationship between the Novice programme and CB activities. One wanted vigorous institute reaction to the CB threat and thought that Communicator licences—a 4th grade amateur licence—would be the answer, by absorbing the better types of pirates, he said. We must have dialogue with CB-ers he thinks.

Another club letter asked whether the Wireless Institute should concern itself with such a thing as the allocation of frequencies to the Diplomatic Service or other commercial users. They believed the WIA would be doing a disservice to licensed amateurs by taking part in discussions about CB licensing. Such

matters, they said, do not affect amateurs unless their frequency allocation is threatened. It is a political matter of no direct concern to us, they say. An official opinion, on such an emotional issue as CB radio, should be avoided, as taking either side is bound to alienate some section of the community they said. Their view is that the allocation of the 11 m band to Novices appears to be a disaster.

In all the flow of words on the subject very little seems to have been missed. Interference to other services, TVI and FRI of all kinds, the Australian position in relation to international obligations, Australian credibility at ITU conferences (beware WARC 79 it is said), the proliferation of sub-standard equipment, what percentage of present illegal operators would licence themselves and what happens to those who don't, what about all the other services using the 27 MHz band apart from ourselves, controls over third party traffic, the outward spread or migration of illegal operators out of an assigned band for purposes of overseas Dx on high power in one form or another, the welfare of the nation in trying to close down, in any National emergency such as a world war, an illegal service which does not exist, false accusations that it is the amateur service which creates interference or that only such and such a service can provide proper emergency communications.

And so the list expands and expands. The right of the individual to have access to the frequency spectrum, the ready availability of suitable equipment, the cost factor and so on.

Finally we return to the Government's discussion paper which sets out three options for legislation. One—introducing a CB service similar to the one in the USA. Two—introducing a CB service on UHF. Three—modifications to existing services to meet genuine community demand for radio communications.

At this stage it seems clear that vociferous elements will opt for the USA type of service on 27 MHz, which is similar to those in use in Canada and West Germany. The only other countries in the world which are known to possess a CB service are New Zealand—75 kHz either side of 26.5 MHz—and Japan—27 MHz band.

The lobby is expected to intensify notwithstanding the costs to the community as a whole and the alleged disenchantment of many in higher places who seemed quite keen about such a service only a short time ago.

What advice can we give? No problem. Join the Wireless Institute of Australia and study for an amateur licence. If a CB service comes into being some time in the future you will have trained yourself to become a more discriminating participant in radio communications."

POSTAL MOTIONS

The two postal motions, 76.20.02 and 76.20.03 (see Jan. '77 AR, p. 4) listed in WIANEWS, were both adopted. ■

WIA EDUCATION

THE ELEMENTARY RADIO COURSE by Roger Davis (VK4AAR), Fourth edition.

This publication is intended to provide an introduction to electricity and radio for the beginner. It forms the first part of the Queensland Amateur Radio "A" course. The 43 typed pages cover electricity and magnetism, radio reception and transmission, plus practical details on constructing a crystal set and a one transistor radio. The text is clear and easy to read. The necessary theory is adequately explained without the use of misleading analogies. A commendable effort.

Incidentally, the "A" course which is sponsored by the WIA Qld. Division and the Windsor YMCA also includes the Intermediate Radio Course by L. Whyte, Novice AOCPS Study Guide, parts 1 and 2, by R. Davis and Introduction to Morse Code

(cassette) by R. Davis: all for \$15. Individual texts such as the one reviewed here may be obtained from the Education Officer of the Qld. Division of the WIA, Box 638, G.P.O., Brisbane 4001.

ERC will be available separately direct from Roger Davis, 2/32 Farrington Street, Alderley 4051—\$1.20 includes postage.

THE ADVANCED RADIO COURSE—A STUDY GUIDE FOR THE AOCPS. First edition January 1977. Written and compiled by Roger Davis and Trevor Thompson.

After having completed the "A" course (see review of the Elementary Radio Course) and presumably thus obtained a Novice licence the student may obtain this study guide for only \$4. It is a very comprehensive study guide which makes reference to two text books only. The course can be completed in 26 weeks. The knowledge required to pass any

AOCPS paper may be obtained almost painlessly by following the guide. All necessary topics are covered without undue effort being expended on peripheral areas yet the treatment is most thorough. Chapter one lists a syllabus for the AOCPS. Chapter two is the study guide itself and covers the theory in 15 sections. Each section lists the relevant paragraphs of the text books plus the time (1 to 3 weeks) for study. To test the depth of knowledge gleaned each section concludes with a set of questions. Chapter three contains the answers to the sets of questions. Chapter four contains past AOCPS papers and chapter five gives sample answers.

The guide is well compiled and any students following this guide would be virtually guaranteed an LAOCPS pass.

Recommended for Novices and other aspirants. VK3AFW. ■

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Peter B. Dodd, VK3CIF
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GD3PBD, YA1PBD, OE1ZBW, ETC., ETC., ON SAFARI!

Some years ago — long ages it seems — we were living on the Isle of Man. Right in the middle of the Irish Sea; operative as GD3PBD. Not a very good place for working DX because of the extremely hilly terrain and a house without a garden but tall enough to sling a multi-band dipole from the roof ridge down to small shrubs front and back. The "little people" were kind enough to us, attendance at the regular meetings of the radio club, exploration trips round Ellen Vannin, practising Manx Gaelic, learning the local history, watching parts of the Isle of Man TT races, taking the kids on the horse trams and many other pleasant diversions kept us active. No population pressures except summer tourists, but plenty of windy wet winter days and the low cold cloud associated with so many of the Western Isles — once under the rule of Tynwald.

I suppose the years of service postings here and there around East Africa had made us into wanderers. So it turned out sooner than later that a decision was made to emigrate to New Zealand. In three months all was made ready to travel overland since air travel for so large a family was too expensive now that we had to pay the bills ourselves, and sea travel was too booked out for years ahead so it appeared. The paper work involved was fantastic.

Great care was taken with mounting the KW2000 transceiver inside the motor caravan but a mistake was made in mounting the mobile whip on the baggage trailer. Only during the happy lazy weeks in Singapore did the opportunity and parts become available to mount it on top of the caravan. Thereafter the DX started rolling in.

Special pains were taken about a suitable little generator but it really was a noisy beast. Essential however for supplying mains voltage for lighting as well as power for the rig, heaters and fans. The

rating was 240V at 800W and seldom was it found wanting. In some places we had 3 inches of overnight snow on the roof. In other places we ran through pre-monsoon heat over 130°F, minus a wind-screen accidentally broken near Lahore but irreplaceable on the sub-continent. When you plan to travel self-contained, more or less, through almost unknown primitive countries, it really is amazing the things you find must go with you. A total of 3 tonnes sounds a lot. A small sealed carton of toilet-rolls stacked on the back seat of the little sedan we took with us nearly landed us in big trouble upon entering Yugoslavia from Austria. I had gone through Customs first in the caravan and the XYL followed in the car. All seemed well but as she was about to drive away, an armed frontier guard manacled her with his rifle and demanded to know what was in the carton. Since he spoke no English, and we had mainly English and a now useless Ki-Swabili, it took time to figure out what he wanted. Fortunately the opening of the carton, and the sheepish production of toilet rolls from within, brought a big grin over his face and we were waved on.

That was where, of all places, I was sure we would have trouble with the rig and had taken the precaution of having it included in the carnet for the caravan. It was slung up inside in full view but received no attention whatever to our great relief. As it turned out we had no trouble with it upon entering all the 17 countries we passed through, except here in Australia, where carnets were not recognised and masses of paperwork had to be signed. The little rig performed faultlessly throughout. Many enjoyable QSO's were had, especially in this part of the world, despite its "innards" being clothed in layers of dust from the Nullabor back to Iran.

What a far cry it seems to the camp site on the shores of a dam outside Kabul where the DX was hard to work and the only safe water to drink came from the American embassy well in the city. The activation of YA1PBD made me a member of the Camel Drivers' Club but I guess all of us could have done without Afghanistan. A dedicated non-tourist country where the petrol was little better than kerosene and your local currency needs could economically only come from the black market. Where the mountain scenery was magnificent but the deserts harsh and forbidding. Where there were more official road barriers than anywhere else, including bandit barriers of sharp stones across the road. Where you learned very quickly to maintain a firm grasp of your money until your change could also be firmly grasped. Where students riot, tanks and armoured vehicles required negotiating with the utmost caution. What a relief, and a thrill too, to motor safely through the famous Khyber Pass — the land of the wild hill tribes — into the sub-continent of India where I had served a spell of duty back in the 1940's.

Should I have obtained reciprocal licences before setting out on the journey? Unfortunately in those days only a few



FILL 'ER UP!

would have been obtainable and then only by personal application to cut delays. In the Asiatic countries there was, and still is, little hope of a foreigner obtaining amateur licences let alone reciprocal visitors' licences. Apart from this the winter in Europe was still with us when we set out thus we made no really lengthy stops until reaching Vienna. It was mouth-watering to be in Liechtenstein without a licence. Perhaps we might have needed radio communication during the many hours slowly inching forward through a blizzard in Switzerland knowing full well the hundreds of metres drop if you strayed off the "road". Anyway it was a pleasure to spend a few quiet days of sightseeing in Vienna by day and operating as OE1ZBW by night.

Listening on the bands whilst in Athens was a severe temptation to indulge in a little pirate activity. The military situation at the time and the advice of George, SV1AB, dictated that discretion was perhaps the better part of valour after all. We wasted little time in crossing Turkey—mile after mile of mountain passes with rotten dirt tracks the further east we travelled. Snow was still on the mountains but the roads were mainly clear as it was early spring by that time. Viewing the beautiful lofty white cone of Mt. Ararat was little compensation for the hours detained the same day at the Turkish frontier post overcoming a graft-hungry Customs officer without smoothing his palm.

Perhaps I should have applied for a licence in Teheran, but we had few thoughts at that time beyond resting a while and preparing for the tougher journey ahead. Another visitor in the same caravan site was Larry Pace, a W6 and his XYL. The magnificent scenic road from Teheran to the Caspian Sea and a dip in its waters did us good after the dust of the capital.

There was no hope of getting licences in Pakistan and India. The former because our road transit pass was only for four

days and the latter because our stay in New Delhi was cut short by the need to reach Madras in time to catch the ship to Singapore. Yes, we visited the beautiful Taj Mahal, Akbar's tomb and many of the other tourist sights of Agra, Gwalior and other historical places. It was a pleasure to meet and address a meeting of amateurs in Madras struggling so hard in the face of poverty (general) and a shortage of everything.

The lazy voyage across the Bay of Bengal and the delights of being in "civilisation" once again in Singapore set us back on our feet. I tried for a licence in Singapore but the delays involved and being merely a visitor finally beat me.

The very day after arrival in Fremantle saw me walking out of Cable House in Perth with my VK6C1F licence! This later changed to VK5C1F, VK3C1F, VK1C1F and finally VK2C1F as we motored leisurely across the Continent. We are truly grateful for the magnificent hospitality shown to us in so many places by friendly amateurs and old friends. We even had a solid 5 x 9 QSO with old friend Robby SZ4ERR, from the caravan park in his son's garden in Adelaide.

The trip over to New Zealand was uneventful and ZL1BDC was activated for a few days precisely one year (for Customs purposes) after setting out from the U.K.

How come I came back to Melbourne? Well, that is quite another amateur story which really began during an amateur cocktail party in Singapore.

If you travelled this route today you would find that reciprocal licensing arrangements for visitors much easier in Europe as long as you possess a G licence. You would find 2m and 70cm repeaters in use almost everywhere but you would need 40m or 80m or even 20m for longer hauls although the first two of these bands are very noisy with QRM and QRN.

The position in Asia is virtually unchanged except that amateur radio is now banned altogether in Afghanistan.

Meeting amateurs in Europe is somewhat difficult unless you have the addresses of old friends, recent copies of local amateur magazines and a working knowledge of the language. You could travel through city after city without even seeing an amateur's beam because there are bigger and taller trees about the place. Even if a beam might be visible from the road it could be almost totally hidden from sight behind the double-storey houses.

Many years earlier we had shown hospitality to a visiting couple who turned up at our house one evening in Malawi during their cine film-making journey through Africa. It was an unanticipated and unexpected pleasure therefore for us to drop in on them unannounced at their country retreat on the eastern side of Lake Constance. Walter DL9HF and his charming XYL (also a licensed amateur) were as surprised to see us as we were to become snowbound the next day in their garden. It is visits of this nature which are of the greatest benefit to host and guest alike. Visits "cold"—that is to say, without at least prior "on air" contacts—are seldom so satisfactory. In the same way it takes time to achieve a thawing of the atmosphere if you, as a stranger, attend a local group or club meeting without first being known to one of the members.

Nearer to home I think, VK5ZX, VK3AHR, VK1JF and VK2GN will know exactly what I mean. Some amateurs derive great pleasure in welcoming visiting amateurs but despite the "bonds of fraternity" in amateur radio there are many who take a different view. Since this applies universally and not solely to Australia, it behoves the visitor to be cautious and tactful when he is overseas. The stranger in your midst might be seeking a pleasant evening in a friendly atmosphere. More often than not he does not want to borrow money, run off with your wife or steal anything loose lying around the place. If he does, throw him out, quick. ■

BURGLAR-PROOF YOUR SHACK

Ed Manifold VK3EM
267 Jasper Road, McKinnon, 3204

Hearing of the loss of further radio equipment on a recent Sunday morning broadcast, and having had an attempted burglary here late in May, together with other thefts of amateur gear in recent months, it looks as though the pattern is becoming more prevalent, and while insurance can compensate in part for the lost equipment, the unhappy experience of a breaking and entering by the thief remains for many years after.

Having experienced this, it was decided when going overseas in 1974, that the installation of dead latch door locks on all external doors, and a good alarm system was the first line of defence against a repeat of this event.

In general there is no house, shack, garage door or window which cannot be protected by one means or another.

Probably the best for door and window openings are concealed reed switches and magnets fitted into (or on to) surrounding frames, with micro switches as a second choice, wired with 22 gauge Bell or jumper

wire concealed in mouldings and walls while fixed windows can be protected with metallic tape.

It may not be acceptable to put metallic tape on front windows from the XYL's point of view, but as these windows are usually covered by Venetian blinds or drapes, and would have to be disturbed by a would-be thief, cords across the blinds or drapes, could be attached to magnets and reed switches, which the slightest movement would actuate.

Roof spaces can be actuated where necessary with fine gauge trip wires, contact plates or other circuit breaking devices.

Even the "Loo" louvre windows, fixed or moveable, can be protected with metallic tape or fine trip wires.

The system which seems to be most favored these days is the closed circuit continuously activated transistorized control.

While the circuit is activated the current requirement is very low, being of the order of 2 mA at 12 volt supply, which from 2 lantern type batteries means a long life, almost equal to shelf life, and if only used as back up supply to an AC power supply, could equal shelf life. Refer to Fig 1.

These days all the necessary "Black Boxes" for control and amplifiers are available from your friendly radio parts man, and even at current prices the cost is cheap, as compared to the loss of that "Black Box" transceiver, but the junk box has usually a goodly quantity of the necessary parts to construct a reliable alarm system, and we would not be amateurs if we did not like constructing something useful, and at present, looks to be a necessity.

For reliability it is suggested that the following points are mandatory:

1. A.C. and battery power supply.
2. Operational at all times, day and night.
3. Well concealed locations for, Unit, Speaker, Switches and Wiring, to prevent premature de-lousing by the would-be thief.

The inclusion of push-button switches in series with each key operated door switch, Fig 2, provides protective alarm "Panic Button" should the need arise for the XYL against the forced entry of any undesirable type of caller.

The system could be extended to include smoke or fire detection sensors, and no doubt other uses would suggest themselves where needed.

One additional control which would be desirable for inclusion (not shown) is that of a "Time-out" circuit after a period of operation, as it has been found that the wailing siren doesn't find much favor with the neighbors after the first few minutes, while they are waiting for the Police to arrive to investigate the cause of the alarm.

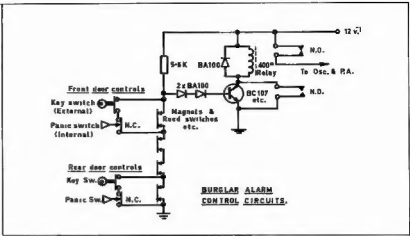


FIG. 2. IMPROVED CONTROL CIRCUITS

Suitable time-out circuits are available commercially.

When away on holidays, or for an extended period, a key should be made available to a neighbor, or to the local Police, in a sealed envelope, with instructions where the alarm control is situated and how to shut down the system, together with address and phone number, of who to contact in case of building damage by forced entry.

In my own installation an internal speaker is switched into circuit while setting and testing all sections, and when found operational the external speaker is switched into circuit so that when all doors are locked and key switches activated the system is in "GO" condition.

By preference this article should not be necessary for "AR", but the thieves and parasites have turned their attention to

hard earned, and in some cases pensioner owned equipment, and while my own equipment is always with me when I am away, I have been thankful that the alarm system has deterred one known attempted burglary while away, as my son said after taking the phone message, "you will be pleased to know that your alarm system paid for itself in full last night". I hope it can do the same for you!"

Acknowledgements:
Electronics Australia

A Reader Built It — October 1969, P. 98
Control circuit & power supplies,
Eastern & Mountain District Radio Club
Project — Basic U.J.T. Alarm.
Fairchild Australia Pty. Ltd.

App. brief A.004 Economic Amplifier
3.5 watt.

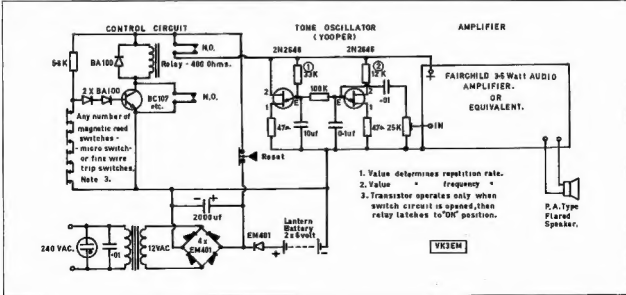


FIG. 1. BURGLAR ALARM CIRCUIT WITH BASIC CONTROL CIRCUIT

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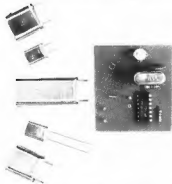


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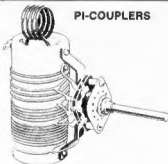


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Suggested for use in "A LINEAR POWER AMPLIFIER FOR AUSTRALIAN CONDITIONS" (Refer "Amateur Radio", April, May & June issues, 1976).

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A SIMPLIFIED METHOD OF ANTENNA TRAP CONSTRUCTION

Ivan Huser, VK5QV
40 Flinders Ave., Whyalla, Stuart, S.A. 068

This article describes a simple method of constructing a higher performance antenna trap with the advantage of low cost and easy tuning.

Trap dipoles provide multi-band operation with a minimum of complexity. Compared with paralleled dipoles, the trap dipole is neater, uses less material and takes up less room. Unlike antennas using tuned feeders, it of course needs no tuning unit.

Many articles have been written about the trap dipole in its various forms, and it is not proposed therefore to go into the details of its operation. It would appear that the main problem associated with the construction of this type of antenna, is the manufacture of the trap itself. Assuming a suitable high voltage capacitor is available, the process of tuning the trap around a fixed value of capacitance is often tedious and time consuming. The VK5QV trap uses an inductor wound with hook-up wire and a capacitor made from a short length of coaxial cable with good results.

A suitable L/C combination to resonate at say 7080 kHz is approximately 10.75 uH of inductance and a 47 pF capacitor. The exact value of inductance is not important, since the capacitance can be readily varied to bring the circuit to resonance, thus making this type of trap an attractive proposition.

The original trap was wound with 19 turns of 7/.0076 PVC hook-up wire close wound on a 1 1/4 inch diameter former which also acted as the strain insulator. Suitable material for the former is readily available in the form of PVC electrical conduit (1 1/4 inch class B) or PVC pressure pipe (25 mm) of the type used extensively in plumbing.

The capacitor is made from RG58AU or RG58CU 50 ohm coaxial cable. RG58CU cable uses a non-contaminating sheath and is therefore to be preferred. Data sheets on hand for these cables gives a capacitance of 30 pF per foot. The necessary length of coax to give 47 pF can easily be calculated thus:

$$\frac{47}{30} = 1.566 \text{ feet} \approx 19 \text{ inches}$$

This is the approximate length of coax required, but in practice, a slightly greater length should be prepared and subsequently pruned to bring the trap to resonance at the desired frequency.

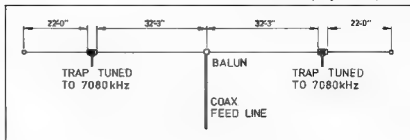


FIG. 1. ANTENNA DIMENSIONS.

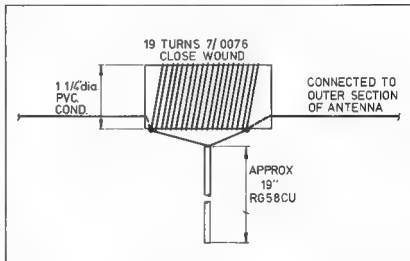


FIG. 2. TRAP DETAIL

With an inductance of 10.75 uH, a variation of capacitance from 46 pF to 48 pF is all that is necessary to cover the 40 metre band. It can be seen therefore that the pruning of the coax should be carried out with care. Notwithstanding, tuning can be achieved accurately in a very short time. When tuning is completed, both ends of the coaxial capacitor should be sealed with a suitable material such as epoxy resin to stop the ingress of moisture.

It has been found that this type of capacitor tends to "load" the antenna to some extent. Thus different antenna dimensions to those given in articles on trap dipoles using conventional traps, will most likely be required. It would appear from the results obtained from experiments using this type of trap, that part of the antenna connected to the braid of the coax capacitor will be most affected. By connecting the braid to the inner dipole as shown, the length of the 40 metre dipole

will generally be shorter than usual due to this loading effect. It can be seen therefore, that the outer section of the antenna will now have to be lengthened to resonate on 80 metres.

The approximate dimensions of the original antenna are given as a guide, but it should be remembered that the final dimensions may vary somewhat with each installation.

Very good reports have been received on 80, 40 and 20 metres since this antenna has been installed, so if you are looking for a simple multi-band antenna, may I suggest you give it a try—you may be pleasantly surprised.

REFERENCES

- THE ARRL Antenna Book. ARRL. Trap Dipole for 80 and 40 Metres. Amateur Radio, Sept., 1975.
- Coaxial Cable Catalogue. Acme Engineering.

makes use of both mark and space signals. Fig 5 shows a scheme for such a coupling. We have here two resonant circuits which sort out the two tones and rectify the signals such that a mark signal gives a positive voltage and a space signal gives a negative voltage. A Schmitt-trigger will now change this combination signal into an on/off keying which will operate the mechanism via a neon coupled relay. You can see that this is the basic principle of most more complicated converter systems, but there are all the subtleties and they are such an extensive subject, that they need an article of their own.

(to be continued)

BOOK REVIEW

PRACTICAL ELECTRONIC PROJECT BUILDING by Alan C. Atneille and M. A. Colwell. Published by Newnes Technical Books. Review copy from Butterworths, Chislewood, N.S.W.

This book of over 100 pages is one of six in a series for the home constructor and appears to be the best of the series.

A concise guide to sound construction techniques is given. Topics covered include: tools, components, kits, layout, wiring p.c. boards, metalwork and cases, finishing, testing and fault location.

The book is liberally illustrated with clear drawings and photographs. At about \$5 it is definitely recommended — perhaps as a gift to that nephew (or uncle) starting out as a do-it-yourself electronics expert.

VK3AFW.

PRINTED CIRCUIT ASSEMBLY by M. J. Hughes and M. A. Colwell. Published by Newnes Technical Books. Review copy from Butterworths, Chislewood, N.S.W.

Another volume in the series for the home constructor, its 90 pages contain much information for the beginner. The OT "chassis basher" will also find much to enlighten him. The techniques involved in producing your own printed circuit boards are well covered except for one unfortunate omission. Photographic development of p.c. boards is not dealt with at all. Topics that are covered include analysis of board materials, layouts from circuits, processing, assembly and some supplementary data.

Useful for the inexperienced. VK3AFW.

QSP

TELECOM 75

The 3rd World Telecommunication Exhibition, Telecom 75, organised under the auspices of the ITU, will be held in Geneva from 26th to 26th September 1979. Telecommunication Journal Oct. 76 it will be remembered that WARC 76 begins in Geneva on 24th September 1979. The editorial in the Telecommunication Journal advises that the centre theme of Telecom 75 will be "Governments, Industry, Research Partners in Progress". The last exhibition, Telecom 75, embraced 360 exhibitors from 37 countries in a 37 000 m² area and attracted over 100 000 visitors.

SOME FIELD STATION!

Max Dawkins VK3TR
74 Springs Road, Nunawading, 3131

On December 29th, 1976, 15,000 people converged on a point 20 km south-east of Melbourne to attend the 11th Australian Scout Jamboree. This day and the following ones were to be classified by many people as "never to be forgotten". Amongst those were a handful of amateur radio operators who had volunteered to organise an amateur radio facility at the Scout Camp.

The team of workers led by Max VK3TR and Mike VK3ZVN commenced work in June 1975 to gather personnel and equipment to set up a field station to introduce Scouts to the art of AR. As time progressed, the magnitude of the task became more and more apparent. As well as those in camp it was expected that as many as 100,000 visitors would pass through the camp and any number of these may stop by for a look at the Amateur Radio station.

While this was being organised, two other radio activities were being planned. The Jamboree Publicity Committee had taken up the idea of a fully fledged Broadcast Station, and it had also been decided to provide an introductory construction project for the Scouts.

All three aims were achieved and perhaps the easiest of the lot was the one which, only a few years ago, would have been completely unacceptable. I refer to the Broadcast Station. Liaison with the Australian Broadcasting Control Board resulted in permission for the project to proceed under the conditions of an Experimental Licence. Co-operation from commercial broadcast stations was sought and received — 3DB's mobile studio and audio equipment arrived on site on the 23rd December. The transmitter was housed in a cupboard in the van and coupled to the audio equipment via an audio compressor and out to the aerial via 50 ohm coaxial cable. The transmitter was christened officially as a type "Fisher Mark 1", originally starting life as Ron VK3OM's 160 metre rig, and now converted to crystal wets was officially logged and fed into control on 1550 kHz. An output of 6.6 watts was officially logged and fed into the aerial. A 50 ft telescopic mast (by courtesy of Hills Antennas) fitted with some top loading in the form of half of Ron's 160 metre helical. Some L and C at the base of the mast provided a feed point for the coax. Jamboree Radio was ready to go on the air at 6.00 a.m. on 29th December. Operation was then from 6.00 a.m. until 8.00 p.m. each day until the official close down on the 8th January. Thanks go to Colin Tyrus of 3AW and Paul Mason (Telecom Australia) for organising the programs and staff.

In the meantime, two tents had been arranged for each of the other activities — a 45 ft x 20 ft marquee for the construction, and an 80 ft x 20 ft marquee for the "shack". The main organisation of the construction project was handed to Bob VK3AIC to get his teeth into. The unit to

be built was a discrete component flip-flop capable of operating in several different modes — a morse code oscillator, a flashing lamp or as an amplifier. About 1,000 boys took part in this activity with hundreds of boys having to be turned away, showing a real need for more of this type of introductory project for the 12 to 14 year old boys.

Meanwhile, on the AR front, aerial masts had been erected. Three of these towered to 60 feet above the ground and were arranged in a triangle. Dipoles for 160 metres, 80 metres and 40 metres were hung at 60 feet on the three sides of the triangle. The two prizes of the aerial farm were hauled to the top of two of the poles — a Hygain TH6DXX on one (with a 2 metre Ringo above it) and a TH3MK3 (with a 27 MHz vertical above it) on the other. The fourth aerial pole was quite a small one, being a bare 30 feet high. On the top of this, however, were two beams — a 10 element two metre and a wide spaced 6 element 6 metre beam (boom length 24 feet). A 2 metre quarter wave on the side of one of the 60 ft poles at about 40 feet provided an aerial for 2 FM.

The dipoles were fed with half-wave length open wire lines and then to baluns to provide coaxial inputs. All other aerials were fed with coaxial cable to the mast heads directly using matching as required at that point. Baluns and a HAM 11 rotator for that BIG beam were loaned for the period by Vcom International and the other beams were ably supported by Stoll rotators on loan from Hi Antennas.

Inside the shack, the equipment finally took shape. Two complete HF stations comprising FT101E transceivers, driving in one case an FL2100B linear, and in the other an FL2500 linear (thanks, Jack VK3APU). Auxiliary equipment for the first station was as follows — an external VFO, a monitor scope, a panoramic adaptor and a digital frequency readout (thanks, John VK3JH). On the VHF side of the fence an IC502 plus 10 watt linear and an IC202 plus a 25 watt linear (thanks, John VK3BAF) gave us our SSB facilities. Several FM rigs were on the side for special contacts.

Having put everything together, it was then an easy (?) matter to commence operation at midnight on the 28th December and operate 24 hours a day until 5.00 p.m. on the 6th January. Who said it was easy? Four hours sleep a day, too many cups of coffee and many exciting DX contacts contributed to the reasons that allowed us to survive the ordeal. The best

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estimate we can make is that between 10,000 and 12,000 visitors passed through the shack, our logs tell us we made 1420 contacts to 72 different countries, including many quite rare ones. Some of the interesting ones included three out of the four A4X stations licensed, 4U1ITU Geneva, HB9S—the Scout World Bureau station in Geneva and many others.

The interest shown in amateur radio generally could not have been any greater. The questions asked by Scouts and Scouters were very intense and in many cases were obviously based on knowledge gained from the current popularity of 27 MHz. Most questions were satisfactorily answered and in many cases converts to Amateur Radio were made, again indicat-

ing the need for more pro-amateur propaganda throughout the community.

The project was organised overall by the Blackburn District Scout Radio Club, a small but keen club who were ably supported by the Eastern and Mountain District Radio Club. Any enquiries from would-be members or supporters of the Scout Club are welcome to contact me at home, QTHR. The club meets at Blackburn on the second Sunday of each month and we would be glad to see any prospective members.

Thanks to the following ops for their assistance: VK3's, ZZB, YCP, ADD, ZVN, ZND, KX, BEX, YAN, AIC, AIS, AYO, LM, ZDM, NAW, AUM, BII, IO, ZU and NAK, VK2ZUR, JR3THH, JR2KDA and KG6JHQ.



TONY VK3IO LOOKS ON AS A SCOUT TESTS HIS HANDIWORK



ABOVE: NICK VK3ZND WAS TAKING NO CHANCES FIXING SIGN TO A MAST — (IT FELL DOWN 3 DAYS LATER)



LEFT — THE SHACK AND ANTENNA FARM AT VK3BSA/P



RAISING THE ANTENNA FOR THE JAMBOREE BROADCAST STATION



BILL VK3ZMI LENDS A HAND IN THE CONSTRUCTION TENT

PHOTOS BY BILL ROSE

A REVIEW OF THE KENWOOD TS-700A TWO METRE ALL MODE TRANSCEIVER

The new Kenwood TS-700A is a fully self-contained AM, FM, CW and SSB transceiver. Full coverage of the 144/148 MHz amateur band is provided in four 1 MHz bands. Whilst now on the Australian market, a version with 144/146 coverage has been available on the Japanese and European markets for some time. It would seem that providing a full four megahertz coverage on a transceiver of this type is not without its problems as other companies now producing VHF gear have yet to market a transceiver of this type. With the addition of the TS700A, Kenwood are now well represented on the Australian scene with a complete range of fine equipment.

FEATURES OF THE TS-700A

The TS-700A has a full VFO coverage of the two metre band from 144 to 148 MHz in four bands. The VFO and its associated tuning mechanism is similar to that found on normal HF transceivers except that there is 1 MHz coverage instead of the usual 500 kHz. The only feature not included in the basic package is VOX. This is, however, available as an external plug-in extra.

Enclosed in a steel cabinet measuring 278 mm wide, 124 mm high and 320 mm deep, it has a smaller front panel than its HF relative the TS-520, but is almost the same depth. Appearance bears a strong relationship to other current Kenwood models. The effect of the grey panel and cabinet with a brushed chrome trim around the panel and control knobs contrasts with the vivid green illumination of the "S" meter and main dial calibration scale to produce one of the prettiest rigs available at the moment. Facilities include both normal and reverse repeater off-set for FM operation; selectable upper or lower sideband on SSB, provision of 11 crystal controlled channels for fixed frequency operation (crystals are, of course, optional for this facility).

The front panel meter reads either relative power output, signal strength or as a centre zero discriminator Indicator to facilitate netting on FM.

Transmitter power output is rated at more than 10 watts on FM and CW, 3 watts on AM and 20 watts DC input on SSB. The reason for rating SSB on an input basis is not stated. An AC power supply is built in and AC or DC operation is selected simply by plugging in the appropriate power cord, both of which are supplied with the set.

Receiver offset tuning is available on all modes as is a noise blanker for SSB reception and a squelch control for FM. Another optional extra is a tone generator

for tone access repeaters. This would not be needed for Australian repeaters.

The main tuning dial has two speeds, one giving a 25 kHz per turn rate and the other 100 kHz per turn rate. The dial plate at the back of the tuning knob assembly is calibrated in 1 kHz segments.

Accessories supplied with the TS-700A include a push to talk dynamic microphone, an assortment of plugs and spare fuses, AC and DC power cords, and a pair of extension feet to enable the front of the transceiver to be tilted up slightly.

The circuit is fully solid state and uses a total of 63 transistors, 17 FET's, 3 IC's and 100 diodes. Construction is on nine main printed circuit boards which are connected together by a comprehensive wiring harness. Accessibility for service would not seem to be one of the TS-700A's good points. However, the front panel can be easily removed and the final amplifier can be detached by removing several bolts securing it to the rear panel of the rig.

THE TS-700A CIRCUIT

Although the TS-700A is naturally a complex piece of equipment, the circuit is easily sorted out. Firstly it should be noted that no phase locked loops are incorporated and that the signal paths are straight forward, more or less on the lines of the more familiar HF transceivers. On SSB, AM and CW the transceiver operates in a single conversion set-up with a 10.7 MHz IF and a filter that provides 2.4 kHz selectivity on all these modes. For

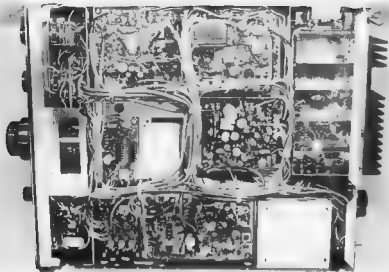
FM, the 10.7 MHz IF is followed up with a 455 kHz section to provide the correct selectivity and required limiting for this. Naturally the 10.7 MHz take off point for this section is before the high selectivity filter used for SSB.

The VFO used in the TS-700A is of the same design as the one employed in the TS-520 but modified to provide a full 1 MHz coverage. The actual tuning range of the VFO is from 8.2 to 9.2 MHz. The output of the VFO is mixed with the heterodyne oscillator to give the actual output frequency. The heterodyne oscillator employs six crystals, four of which mix with the VFO to give the four bands as normal operation. The other two are selected with the repeater offset selector and operate on the 146 and 147 MHz segments only. These two crystals are switched in and out automatically for either transmit or receive depending on whether normal or reverse repeater operation is selected. The heterodyne oscillator frequencies are 125.1, 126.1, 127.1 and 128.1 MHz for simplex working with the two repeater off set crystals on 126.5 and 128.7 MHz. Extensive use is made of balanced mixers throughout the transceiver which is perhaps one of the factors why spurious responses are practically non-existent.

Transmitter output and receiver input are both fed through a band pass filter network which is tunable via the front panel 'FINAL' control. This serves two purposes. It gives the receive section



KENWOOD TS-700A — PHOTOS BY KEN REYNOLDS VK3YCY



INSIDE THE TOP COVER OF THE TS-700A

excellent front end characteristics with a total absence of cross modulation. It also assures a transmit output free from spurious signals. A calibrator provides 100 kHz marker points. These are derived from a basic 10 MHz crystal followed by a buffer stage and two divide by ten stages.

Three different modes are produced in the transmitter generator unit. The SSB carrier generator which also acts as the receive BFO, feeds a four diode balanced modulator for SSB generation. On CW the balanced modulator is unbalanced to produce the carrier required. A separate low level AM modulator delivers normal double sideband signal, however, the carrier output from the transmitter has to be kept to about a quarter of the normal CW output to make allowance for the peak output of the AM signal. All modes are produced at 10.7 MHz plus or minus a small amount for USB, LSB or the AM/CW frequencies.

THE TS-700A ON THE AIR

Firstly the transceiver was put through a series of tests to determine its actual capabilities. Just how these findings translate into actual operation in the shack will be discussed later.

Receiver sensitivity was checked first. 20 dB of quieting was achieved at an input of .25 μ V on 148 MHz and .18 μ V at 144 MHz. This of course was on FM, and with the squelch control set just on the mute opened with .14 μ V input at 148 MHz.

Sensitivity for SSB was measured at 144 MHz and the following results were obtained 1 μ V produced a 4 dB signal to noise ratio, .5 μ V gave 22 dB, and 1 μ V gave 26 dB. The calibration of the 'S' meter was next tabulated.

For FM		For SSB	
S1	2.0 μ V	S1	.8 μ V
S3	2.4 μ V	S3	.9 μ V
S5	2.9 μ V	S5	1.9 μ V
S7	5.6 μ V	S7	2.6 μ V
S9	25.0 μ V	S9	9.0 μ V
S9 + 20	2.0 mV	S9 = 20	100 μ V

As received the 'S' meter would not read above S9 + 20 dB and all readings were taken with the meter set as received. However, it is possible to re-adjust this with an internal preset control.

The maximum deviation accepted by the receiver was \pm 7.0 kHz. Above this figure the distortion on the received audio increased rapidly.

Transmitter power output was next on the list. CW and FM output at 148 MHz was 14.0 watts and SSB peak output at 144 MHz was 10 watts. Somewhat higher output on SSB could be obtained higher in the band.

Transmitted FM deviation was set at 6 kHz as received from the agents, but the FM microphone gain control was set far too high. When this was reset the transmitted audio quality on FM was judged to be fairly good, although somewhat lacking in high frequency response. Transmitted audio on SSB was judged excellent with a very acceptable degree of balance between highs and lows. Received audio quality on FM was slightly lacking in high frequency response, but on SSB it was excellent and quite comparable with any good HF transceiver.

VFO stability was checked and found to be very good. From a cold start the total shift did not exceed 500 Hz but the linearity of the dial calibration was only fair. Setting against the calibrator at the low end of the band, the calibration error increased up to a maximum of four kHz at the centre of the band and then gradu-

ally returned to reference at the high end of the range. So long as the calibrator is used frequently when moving up and down the dial no real problems should exist.

The FM discriminator was out of balance on our review transceiver. With the meter switched to the centre zero position, the zero point was accurate and stable but on tuning through a signal, the needle swung much further one way than the other. We did not check this further but it could have been the reason why the receiver was very critical to deviation over 7 kHz. At 144 MHz the calibrator was 700 Hz off frequency.

Next we transferred to the shack to actually try the TS-700A on the air. The tuning control had a rather odd feel about it. On rotating the knob every tooth in the gear drive could be felt and when using the fast speed tuning to traverse the band a noise like filling metal was produced. Several visitors were invited 'o try the tuning and opinion was divided, some liked it, others did not.

Tuning up was easy. The FINAL control could be set for the desired portion of the band, the actual peak being very broad. The DRIVE control was peaked on transmit in either the FM or CW mode and again it proved to be very broad. In fact it had only minimal effect on output. Indicator lights signalled the 'ON AIR' condition and also the selection of receiver offset operation.

Reception of SSB signals was excellent with good quality and very low audible distortion, due no doubt to the excellent AGC action and the balanced diode product detector. The AGC release time was slow, taking about three seconds to decay from the 'S' 9 point. Fast acting AGC is automatically provided for CW and AM operation. The noise blander action was fairly good. It was effective on car ignition noise but, perhaps in common with most blanders, its effect was variable on power line and domestic appliance type noise. Using the blander did not seem to produce any cross modulation.

INSTRUCTION BOOK

The TS-700A instruction book is well written and gives clear information on all aspects of operation. Most of the internal adjustments are covered but, as is usual these days, no actual service information is included. At this point in most reviews we make some criticism of this fact but not in the case of the Kenwood. Available from the distributors at nominal cost is a complete service manual that would delight the heart of any enthusiast. If you are the "fix it yourself" type then all the information you will need is included — circuit board layouts, full parts list, and complete alignment procedure. If you are just the type who likes to see how things work, again this is for you.

In any case, full service facilities are available from the Melbourne agents for Kenwood, Vicom International, 139 Auburn Road, Auburn from whom our review TS-700A was obtained. ■

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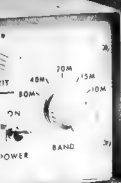


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SPECIFICATIONS

GENERAL

Frequency Coverage

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7 0000 Mc	7 4999 Mc	27 0000 Mc	27 9999 Mc	in 100 Hz increments
14 0000 Mc	14 4999 Mc	28 0000 Mc	28 9999 Mc	

receive only

Frequency Control: Ultra stable digital frequency synthesizer with crystal reference includes 100 Hz digital readout, resolution <20 Hz per hour, 99% frequency accuracy equal to 99% accuracy. Additional fine adjust control allows ± 50 Hz for continuous band coverage.

External Frequency Control: Rear socket for external VFO or synthesizer input no crossband operation. Frequency input coverage same as this with built-in synthesizer.

Mode of Operation: SSB with selectable sideband. CW with automatic 1 kHz offset on receive. Semi break in with adjustable delay and sideband comes standard. Internal features include: ALC, receiver squelch, noise blanker, VUX, speech processor.

Power Input Required: 12-14 VDC, negative ground only, also damage 10W, 15V DC.

Dimensions: 7.8 H x 12.1 D x 9.5 W (Depth includes heat sink, 7.2 CM x 30.8 CM x 24.1 CM (Depth includes heat sink).

Weight: 6 pounds (2.6 kg)

Rear Panel Connectors:

Auxiliary Functions:	External A.C. in
	V. output
	Ground
	V. control for optional external synthesizer
	EXT. 800 V
	Current sink for driving external circuit
	A.C. in
	Audio out. 8 ohms

Power: 12-14V DC input

Hi-ZHF type

Phone Jack: Earphones, RCA type (if desired)

RECEIVER

Circuit Design: Direct conversion to 5.6 MHz w/ using balanced mixer. Encephalic immunity, overdrive and cross modulation.

Selectivity: <0.3 Hz for 10 dB

Frequency Control: 100 Hz per hour

Frequency Control: By digital synthesizer with 6 digit readout to 100 Hz. Fine tuning adjustment slider ± 50 Hz from indicated frequency.

Power Output: 100 watts PEP and CW @ 13.6 VDC input. An ideal power output level for driving most grounded grid loads.

Unwanted Bandwidth Rejection: >40 dB down @ 1000 Hz audio

Carrier Suppression: >50 dB down

Two Tone Modulation: >30 dB below peak power level

Narrowband Output: >45 dB below peak power level

CW Transmitt: Same break in with sideband standard. Automatic 1 kHz offset on transmit frequency.

Speech Output: >50 dB below peak power level

Frequency Control for SSB: PTT standard. VUX with option

Microphone Input: Dynamic or crystal, high impedance

Audio Response: 300 Hz to 3000 Hz ± 6 dB

Mixer: Reads ALC on transmit or forward and reflected power

Lower Amplifier Control: Auxiliary socket on rear provides for keying of rear

Control: Large capacity heat sink less supplied. For SSB/RTTY and semi-continuous transmit forced air cooling on heat sink less recommended.

TRANSMITTER

Circuit Design: Broadband design to eliminate the need for tuning. Excellent harmonic and 1st order suppression. ALC, intense VSWR protection. Provision for external A.C. input, positive going.

Frequency Control: By synthesizer with 6 digit readout to 100 Hz. Fine tuning adjustment slider ± 50 Hz from indicated frequency.

Power Output: 100 watts PEP and CW @ 13.6 VDC input. An ideal power output level for driving most grounded grid loads.

Unwanted Bandwidth Rejection: >40 dB down @ 1000 Hz audio

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Lower Amplifier Control: Auxiliary socket on rear provides for keying of rear

Control: Large capacity heat sink less supplied. For SSB/RTTY and semi-continuous transmit forced air cooling on heat sink less recommended.

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PETER SCHULZ, VK2ZXL

Amateur Radio March 1977 Page 19

VK-ZL OCEANIA DX CONTEST RESULTS FOR 1976

Some observations . . .

1 For various reasons, VK and ZL results with recent certificates are being posted out earlier than usual. Overseas results will not be available for at least six weeks or more.

2 Participation Cards—as part of NZART Jubilee—have been sent to all who submitted logs. Unless SASE or IRC was sent, these went via QSL Bureau.

3 Increased ZL support was to be expected but there is also a considerable increase in VK logs compared with 1975. Continuing lack of activity from ZL4 is unfortunate. Tremendous support is already in evidence from Japan—as well as from Czechoslovakia.

4 Publicity in some areas around the world fell much to be desired—regrettable.

5 As well as being sent to overseas certificate winners (and major Societies) overseas results will be published in "Break-In" and in "Amateur Radio".

6 The manner of scoring for VK and ZL entries has been raised. The "BER" system was introduced to provide the most equitable system for VK's and ZL's and from personal experience it has been too difficult to manage—even when present logs have to be re-scored. Admittedly it does take longer—but it also helps in checking contacts made. Because of the great increase in the number of prefixes available it is suggested that these could be used as a new basis for scoring.

FOR VK/ZL STATIONS: 1 point for each contact on a particular band with the score for that band being the total of contact points multiplied by the total of different prefixes worked on that band. (NOTE: To be meant that VK, ZL, WA1, WB1, etc., would all be different—as would JA1, JJ1, JG1, JR1, etc., etc.) Total "all bands" score would be the sum of the totals for individual bands.

7 Jubilee Plaques will be posted to top VK's on CW and on phone and to ZL's on a district and band basis.

8 A few logs were re-scored while others were so set out that this—while desirable—presented too formidable a task! Such logs have the total score indicated with no component band scores.

9 One log at least was unreadable to the extent that re-scoring was impossible. There should be no need to rewrite or type logs—a carbon copy of the operating log is sufficient. For the "speedy" operator this means some preparatory work—and the omission of some mundane details.

10 Whether because of the proliferation of contests—or because of an "apparent" lack of interest, the continuation of VK/ZL/O has been investigated on several occasions and comments by WIA in "Amateur Radio" are noted. Here is the fact which is often overlooked—the number of logs received (on a smoothed average) has steadily increased during the period NZART records have been kept—from a total of 192 in 1954 to the high of 791 in 1969 which was NZ B-Centennial (196 in 1970 for Australia B-Centennial) to 519 in 1972, 465 in 1973, 511 in 1974 (536 in 1975 and an estimated 500 plus in 1976 (SWL logs not included). A major problem would be lack of consistent interest and activity by VK's and ZL's. From comments received and from observation, overseas interest in "VK/ZL" is high. Another major problem is organization and costs. Organisation on calls for the availability of personnel with time to attend to the very great administrative load expeditiously and with honorary appointments is the asking a great deal and costs—these are escalating—each certificate sent out this year would cost NZART at least 50 cents but some via aces cannot be measured by cost alone. Nevertheless, this is food for thought.

11. My appreciation is extended to all who submitted logs many of which were obviously not trophy winners. Without the interest and co-operation of such people this contest activity would collapse.

12. NZART sponsors numerous operating awards which might provide some stimulus to your enjoyment of amateur radio. There are grades of difficulty to suit all—from the prestigious "5 x 5" requiring "know-how" on "all bands" to others which require a reasonable degree of activity.

13. Your comments on the organisation of this contest would be appreciated.

73
Jock White ZLQXZ, NZART Contest and Awards Manager.

RESULTS

VK—CW									
Call	80	40	20	15	10	Total			
2APK	450	4210	7565	3465	205	15995	60P	—	—
2GJW	545	1685	6700	2580	—	11800	6RU	—	—
2AFG	225	2735	6005	1745	55	10935	6TU	—	—
2BLJ	480	1575	6055	2275	210	10555	7BC	210	480
2CAX	620	2325	5435	1900	—	10280	7HE	—	—
2OL	135	85	365	930	710	2185	7MC	750	—
3MAJ	385	1970	5320	2345	—	10020			
3QJ	—	7395	—	—	—	7395			
3VF	410	—	4770	1740	—	6920			
3CM*	540	540	3090	1435	—	5325			

* plus 130 on 160 m

Call	80	40	20	15	10	Total
RRJ	—	—	—	2470	—	2470
3KB*	2015	65	—	—	—	2125
* plus 65 on 160 m						
3VC	—	—	—	—	1690	1690
3UJ	915	—	890	220	—	915
3AT	—	110	—	—	905	1015
3KS	—	—	—	—	110	110
4XA	385	3530	8900	4225	1570	10690
4HE	—	3040	5020	—	—	8060
4DD	—	—	—	5485	—	5485
4LV	—	—	2500	360	—	2860
4XV	—	—	1620	—	—	1620
4KX	—	975	385	—	—	1360
5NO	—	885	4460	2770	705	10615
5OQ	—	—	7135	1580	—	8715
5RX	—	840	3685	910	—	5645
5DM	—	—	3120	1645	—	4765
6FJ	—	555	4285	4575	—	9335
7BC	580	950	5740	410	—	7480
7HE	—	—	—	—	2625	2625
7RY*	455	535	605	—	1705	3300
* plus 110 on 160 m						
7JZ	—	—	1110	—	—	1110

	VK — SWL					
Call	80	40	20	15	10	Total
L3042	—	—	—	—	—	4300

WIA—1976

Call	80	40	20	15	10	Total
1RM	—	—	7640	—	—	7640
1FT	—	530	1100	850	660	2140
1OB	—	265	3905	—	4170	4735
1LT	—	—	1650	420	2070	2490
2KT	580	1030	8400	6205	12915	19215
2APK	425	1240	8225	2530	1455	15085
2BLJ	165	420	6615	1975	—	9175
2ABC	—	—	4475	—	—	4475
2PT	—	—	785	2085	—	2870
2DEL*	135	55	575	845	165	1730
* plus 55 on 160 m						
2AKV	—	—	970	165	—	1135
2OW	—	—	270	215	—	485
3AMK	—	—	6180	3200	—	9380
3AKK	—	1155	4620	3670	—	9445
3BHN	—	—	7910	1815	—	8725
3SM	255	265	3625	2090	430	6065
3AIE	—	—	3990	1900	—	5890
3HE	100	—	2825	1490	—	4415

3WT	—	—	1700	1675	495	3860
3XB	—	870	2210	910	—	3790
3CM*	100	410	2815	—	—	3500
* plus 175 on 160 m						
3B8F	85	55	1025	635	—	1770
3ZD	—	—	1910	—	—	1910
3WV	—	—	1190	—	—	1190
3AT	—	—	375	720	—	1095
4AAU	—	—	8885	2725	1000	10410
4TE	875	—	4640	2175	—	7490
4EZ	—	—	5855	1825	—	7680
4PJ*	116	—	1525	2880	—	4570

* plus 55 on 160 m

4UQ	380	—	1615	—	—	2135
4AM	—	—	—	—	—	check
5NO	—	1300	7675	2600	—	11975
5Z2*	—	1405	3435	1850	—	6690

* plus 160 on 160 m

6RX	—	345	2350	1920	—	4815
5XZ	—	—	1215	200	—	1415
6ND	—	430	325	—	—	725
—	—	110	7480	2275	—	8915
6BV	—	—	3225	3500	—	6725
—	—	—	2435	1315	—	375
6RU	—	—	1040	—	—	1040
6TU	—	—	110	—	—	110
7BC	210	480	4690	1190	—	5770
7HE	—	—	—	—	—	750

ZL—CW

Call	80	40	20	15	10	Total
1BOK	1035	3335	6515	8600	840	15325
1AIZ	1205	4590	3310	2910	1080	13005
1AIX	—	855	4190	5450	780	8285
1AFH	255	1450	2995	3985	—	8935
1AMO	—	7620	—	—	—	7620
1APW	380	1180	2860	1470	870	8880
1AH	—	6642	—	—	—	6642
1HV*	620	1545	1705	765	—	4735

* plus 190 on 160 m

1AMM	55	900	335	—	—	1390
1MT*	420	55	975	603	—	2315
* plus 265 on 160 m						
1AXX	1890	—	—	—	—	1890
1BOK	490	65	975	930	—	2315
1MQ	510	—	160	—	—	670
1BH	—	—	—	—	—	check
2UW	400	8335	4570	2190	—	15495
2BR	460	4035	3735	3135	50	14020
2AGY	—	5355	4575	2335	210	12375
2SW	368	1005	2790	1430	—	8595
2ACP	—	5300	—	—	—	5300
2KX	—	3365	—	635	—	4300
2MM	168	815	2230	—	—	3210
2AM	—	—	2305	—	—	2305
2AH	—	—	—	155	—	155

2ZHC	—	—	—	—	—	check
2AHC	—	—	—	—	—	check
2BWH	—	—	—	—	—	check
2BGE	—	—	—	—	—	check

3GQ	—	11840	1805	2125	—	15770
3GQ	1120	5815	5920	1410	—	14365
3BZ	420	3635	5710	3280	—	12645
3PJ	1410	—	—	—	—	1410
3APC	—	—	600	—	—	600

ZL—SWL

Call	80	40	20	15	10	Total
ZL1-49	—	—	—	—	—	8090
ZL2-129	—	—	—	—	—	2290

ZL—PHONE

Call	80	40	20	15	10	Total
1BKX*	320	3480	9995	4805	—	19595
* plus 180 on 160 m						
1AGB	—	—	12795	—	—	12795
1AIZ	780	3290	4285	2915	110	11390
1AIX	—	—	8755	—	—	8755
1AKY	110	820	2120	4395	110	7825
1BOQ	—	8560	—	—	—	8560
1BOK	—	—	—	6400	—	6400

ZL — PHONE (continued)

1 D	310	—	5115	890	—	6315
1AMM	55	155	3670	1400	—	5290
1HE	320	—	2575	—	—	2875
1TB	—	—	1710	480	—	2435
1BH	—	—	1250	990	—	2220
1FN	750	—	—	—	—	750
1AD0*	453	—	—	—	—	7405
* p us 290 on 160 m	—	—	—	—	—	—
1AXX	—	—	—	—	—	check
1BL	—	—	—	—	—	check
2ACP	55	3410	6880	3505	—	13650
2BP	—	—	6210	1940	—	8150
2ANC	245	1425	2480	2410	—	6550
2AH	—	—	4080	1580	—	5470
2BCX	—	—	5055	—	—	5655
2QY	675	210	1605	1600	—	3990
2AWH	1280	—	—	—	—	1290
2AHD	—	55	1620	180	—	1265
2AIB	—	—	650	—	—	650
2NIW	—	—	275	—	—	275
2HE	265 on 160 m	—	—	—	—	265
2GX	—	—	—	—	—	check
3GG	585	3485	6335	1380	—	11975
3BK	420	805	5610	1570	—	8405
3ACB	265	110	2555	950	—	3865
3ABC	165	—	1875	—	—	2040
37X*	545	55	—	—	—	620
* pl s 220 on 160 m	—	—	—	—	—	—
3ACC	325	—	—	—	—	525
u	320	780	1150	55	—	2285

VK AND ZL INDIVIDUAL BAND SCORES

All Band —	CW	PHONE
VK4XA	16590	VK2XT 19215
VK2APK	15688	VK2APK 15085
VK3GW	11805	VK8NO 11679
ZL3QQ	15770	ZL3BX 18550
ZL3UW	15485	ZL3ACP 13500
ZL3BK	15328	ZL1AXB 12798
160 m —		
VK3MR	815	VK3CM 175
VK3CM	738	VK5Z2 160
VK7RY	510	VK2BE... VK4PJ 55
ZL1MQ	519	ZL1AQO 290
ZL1MT	285	ZL3HE 215
ZL1HV	190	ZL3TX 229
50 m —		
VK3XB	2015	VK7MC 750
VK2CA	620	VK4TE 675
VK20W	545	VK2T 590
ZL1AXX	1590	ZL2AWH 1280
ZL3PJ	1410	ZL1A Z 780
ZL1A Z	1205	ZL3GG 595
40 m —		
VK3Q	7268	VK2APK 2420
VK2APK	4210	VK5Z2 1405
VK4HE	3840	VK5NO 1300
ZL3QQ	11840	ZL1BQO 6660
ZL2UW	8335	ZL1BKX 4480
ZL1A H	8640	ZL3GG 3485
20 m —		
VK2APK	7595	VK2XT 9400
VK3Q	7135	VK2APK 8225
VK4XA	6900	VK5NO 7675
ZL1BK	6518	ZL1AXB 12795
ZL3GG	5920	ZL1BKX 9995
ZL2BR	5735	ZL1AQO 8755
15 m —		
VK4DO	6485	VK2XT 6206
VK6OS	4575	VK3ARK 3670
VK4XA	4225	VK6BV 3500
ZL1B.H	3665	ZL1BOK 6400
ZL1BOK	3600	ZL1BKX 4605
ZL1NG	3450	ZL1AKY 4365
10 m —		
VK4XA	2870	VK2XT 1940
VK2QL	710	VK2APK 1485
VK5NO	705	VK4AAU 1000
ZL1AIZ	1090	ZL3GG 160
ZL1AFW	870	ZL1AIZ 110
ZL1BOK	840	ZL1AKY 110

COMMERCIAL KINKS

Ron Fisher, VK3OM

3 Fairview Ave.,
Glen Waverley, 3150

AN SSB FILTER FOR THE YAESU FRG-7 RECEIVER

Since the introduction of the Yaesu FRG-7 receiver only a short time ago, it has established itself as one of the finest low cost communications receivers ever marketed. However, initial low cost must impose restrictions on available facilities and one of these is the lack of a suitable filter for SSB reception. A compromise degree of selectivity has been incorporated in the original receiver for all modes.

Phil Williams VK5NN has come up with the answer and the work involved should not be beyond the scope of the average enthusiast. Over to Phil.

"It is easy to fit a 2.5 kHz filter in the FRG-7 to improve its reception of amateur SSB and CW signals. Suitable Murata filters are listed in the catalogue but are not readily available, so it was decided to use the filter designed by Ian Pogson VK2AZN, employing four of those little red ceramic IF units type SFD 455B, coupled with small 47 pF ceramic capacitors. It is necessary also to adjust the BFO frequencies for this filter and the procedure adopted, requiring no test equipment, is as follows. Fig 1 shows the method of mounting and wiring the filter. There is a spare bank of the mode switch S3, which may be used to switch to the output of the existing kHz filter for AM, or the 2.5 kHz filter for SSB or CW. The total cost of the new filter parts is about 6 or 7 dollars. The attenuation of this filter is a little more than the Murata filter, but the results are not impaired by this and the overall receiver sensitivity is quite adequate.

The filter is so small and light that it will mount on the base of the PCB with the two earth wire tails from the centre terminals of the SFD 455B's. A piece of paper masking tape 6 mm wide around the four units will keep them together. Bell wire was used to connect between the filter outputs, switch and following stage input, keeping the wires well apart to avoid coupling. The copper connection on the PCB was cut with a sharp pocket knife. A strong light behind, that is above the board, will help to locate it.

To retune the BFO it is necessary to first remove the black (earth) and yellow wires from the PCB near TC404, and from the rough loom in the set, and run them around the edge of the PCB via the corner of the chassis. Keep the yellow wire about 3 mm from the chassis — a loop of tape will do this. This avoids coupling from the BFO into the IF strip and ensures that the BFO will not change when you put the set back into its case.

To adjust the BFO, temporarily connect the wide filter in circuit and then tune the set to zero-beat on a carrier such as a broadcast station. Changing sidebands from one to the other should produce a 3 kHz beat which, musically, is near the third octave above middle 'G' on the piano.

Adjust TC404 until this is achieved. Now put the narrow filter into service on S3 and adjust T406 on y until changing sidebands on the mode switch, while listening to noise, produces a similar pitch on the noise spectrum. Finally check the receiver for LSB on 7 MHz and below and for USB on 14 MHz and above.

Another method of switching the BFO using a biased diode was sent to me by Ron VK5KS. It is shown in Fig 2, which is self explanatory. Ron suggests a small extra capacitor of 6.8 to 10 pF across TC404 may be needed. The diode cathode goes to earth and the anode to TC404 and the new 30K resistor.

It is also proposed to explore the addition of a noise blanker for the FRG-7

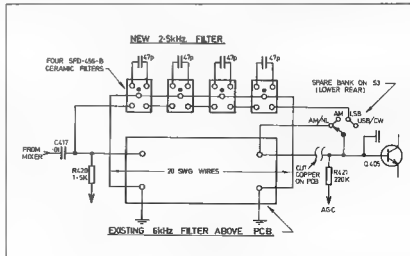


FIGURE 1

Hy-Gain's Incomparable HY-TOWER for 80 thru 10 Meters Model 18HT

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- Automatic Band Switching
- Installation on 4 sq. ft. of real estate
- Completely Self-Supporting

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The Versatile Model 18V for 80 thru 10 Meters

The Model 18V is a low-cost, highly efficient vertical antenna that can be tuned to any band ... 80 thru 10 meters ... by a simple adjustment of the feed point on the matching base inductor. Fed with 52 ohm coax, this 18 ft. radiator is amazingly efficient for DX or local contact. Constructed of heavy gauge aluminium tubing, the Model 18V

HIDAKA'S VS-41/80KR for 10 thru 80 Meters

- An Individually Tuned High-Q Trap for Each Band
- Takes Full Power
- Rugged Total Performance Construction
- Easily Installed Using Minimum Space

Now ... a modestly priced easily erected all-band vertical that delivers outstanding omni-directional performance on each band ... HIDAKA S Model VS-41/80KR. It is ruggedly constructed of heavy gauge, taper-swaged aluminium ... uses four separately tuned High-Q air dielectric traps ... each trap factory tuned to provide maximum performance 80 through 10 meters. Uncompromised performance for short haul or DX communication is ensured by the low angle radiation pattern developed by the VS-41/80KR. SWR is 2:1 or less on all bands. If mounted in an elevated position a radial wire system should be used. An accessory TRAPPED radial wire kit is available, the Model VS-RG. The VS-41/80KR comes complete with Tereyne guying cord.

TECHNICAL DATA

Power Rating	1 kw AM, 2 kw SSB
Feed Line Required	50-70 ohm coax
Minimum Ground Required	8ft. Ground Rods or VS-RG
Overall Height	28.4 ft.

NEW ...

Special hinged base assembly on Model 18HT allows complete assembly of antenna at ground level ... permits easy raising and lowering of the antenna.

may be installed on a short $\frac{1}{4}$ inch mast driven into the ground. It is also adaptable to roof or tower mounting. Highly portable, the Model 18V can be quickly knocked down to an overall length of 5 ft. and easily re-assembled for field days and camping trips. Shpg. Wt., 5 lbs.

Above prices include S.T. Freight and Insurance is extra.
90 day warranty. Prices and specifications subject to change.



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NEWCOMERS NOTEBOOK

Rodney Champness, VK3UG
David Down, VK5HP

AN AMATEUR RADIO TRANSMISSION TIMER

Why do you need a device to time your "overs"? You never exceed five minutes allowed between call signs and you have never been timed out by the local 2 metre repeater — OR HAVE YOU? This device will automatically time your overs from the time you press the button or hit the morse key until such time as there is a break in transmission exceeding 20 seconds. Timing is set to give a 2 second burst of tone just before the expiry of either 2 minutes or 5 minutes total transmission time. The tone burst reminds you to let go the button when you are using the 2 metre repeaters so that you will not be timed out, or to remind you that 5 minutes is up and you should give your call sign.

TECHNICAL DESCRIPTION

The timer consists of three timing circuits interconnected so that the timer will function not only on AM and FM transmissions, but on transmissions where interruptions to the transmitter RF output are normal such as CW or SSB, or where the backwards and forwards operation of the communications does not give a break in transmission longer than 20 seconds. If a gap of greater than 20 seconds occurs the timer will reset.

DC is applied to TR1 via a resistor-capacitor combination, this combination forming a timing circuit with an operate time of between 1 and 2 seconds. TR1 is normally turned off until DC is applied to the input. This input will be about a volt or more but at a very low current. The input can be provided by DC output from a SWR bridge, a crystal set tuned to the transmission frequency, a relay contact within the transmitter switching a small voltage to the input, or from a field strength meter. When TR1 is turned on, TR2 is also turned on and in the short conducting time of TR1 the capacitor in the collector circuit of TR2 is fully charged. The charge on this capacitor gradually discharges through the base-emitter junction of TR3 and this transistor is held on for approximately 20 seconds. TR3 is saturated when it is turned on and its collector is only 0.1 volts positive with respect to earth, which means that TR4 is turned off. TR4 requires about 0.6 volts to turn it on. When the timer is not operating TR4 is normally turned on as TR3 is not conducting and the current through the base of TR4 is enough to saturate it and pull the collector down to 0.1 volts positive with respect to earth. However, when timing, TR4 is non-conducting and pin 4 of IC1 is several volts positive with respect to earth which en-

ables IC1 to commence its timing cycle. At the commencement of the cycle pin 3 goes high in voltage and causes TR6 to conduct heavily pulling its collector down to 0.1 volts which being connected to pin 4 of IC2 inhibits its operation and no tone is heard.

After a period of time the voltage on pins 2 and 6 of IC1 reach two-thirds of the supply voltage causing the discharge circuit via pin 7 to commence operation. Whilst this discharge is taking place pin 3 of IC1 goes low in voltage and TR6 is cut off which means that full supply voltage is applied to pin 4 of IC2 via a 10k ohm resistor. IC2 now starts to oscillate at about 1 kHz and the output is heard in the high impedance miniature loudspeaker. Suitable 2 in. speakers are available from Ham Radio Suppliers or Radio Parts. After a period of 2 seconds IC1 has discharged the capacitor at pins 2 and 6 of IC1 to one-third of supply and at this voltage the discharge cycle concludes and the charge cycle recommences. At this instant pin 3 of IC1 goes high causing TR6 to conduct heavily so that the voltage on pin 4 of IC2 once again goes low cutting off the oscillator. As long as the voltage on pin 4 of IC1 is kept above 1 volt positive IC1 will maintain its timing cycle of either 2 or 5 minutes capacitor charge and 2 seconds discharge. IC2 is keyed "on" (oscillates) only during the discharge time of IC1.

The timing plus oscillator operation is not quite as straightforward as the description above would seem to indicate. Problems which are peculiar to the LM555 (NE555, etc.) timing IC had to be overcome before it would time accurately and sound the timing tone only at the end of the timing cycle. If pin 4 of IC1 is earthed as it is in the standby mode, pin 3 is also low which means that TR6 is cut off and pin 4 of IC2 is supplied with full voltage via a 10k ohm resistor, which will turn it on and it will oscillate. This is undesirable as tone would be heard when the timer was not working. D2 was therefore wired in so that pin 4 of IC2 would always be at or near earth whenever pin 4 of IC1 was at or near earth. However, the voltage at pin 4 of IC2 has no control over the voltage at pin 4 of IC1. So when the timer is not operating both pin 4s are to earth or nearly so and neither of the ICs is working. At the instant that the control line to pin 4s goes positive pin 3 of IC1 goes positive saturating TR6 which takes pin 4 of IC2 immediately to earth and no tone is generated.

Another problem with the circuits used with the 555 timer is that the first timing cycle is always longer than subsequent periods. This is due to the fact that the capacitor from pins 2 and 6 of IC1 to earth must be charged from zero volts to two-thirds of supply before the discharge cycle commences. The discharge cycle drops the voltage across this capacitor to one-third of the supply, and it then commences to charge from the one-third supply level instead of the initial zero supply condition. To overcome this prob-

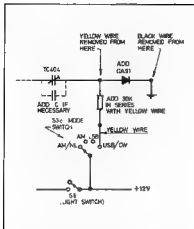


FIGURE 1

We are looking at a version of the one used by VK2AZN in his solid-state Delta-net Receiver. There is plenty of room in the receiver for six and two metre converters and a separate FM IF strip similar to the VK3ZMU unit from "AR" of June 1970 could be a useful adjunct. The AM/ANL position on the mode switch could be used to switch the latter, as the existing diode noise limiter is not very useful for amateur reception. As a final note of warning to all owners of FRG-7 receivers, I suggest that you see that yours is fitted with a 3-wire power cord. Mine, as delivered, had a 3-pin plug on a 2-wire cord. This is certainly unsafe to you and members of your family. Many amateurs leave the wall switch on at all times and control the gear by front panel switches. A fault could make the case alive.

I had to file out the plastic cord grip to take tight duty 3-core flex, and soldered the earth wire to the lug which is pressed into the chassis for this purpose. It is just behind the transformer, easy to find and use."

I am sure all owners of the FRG-7 will be grateful to Phil for his ideas which make a good receiver better.

It's warmer up here!

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TS-820*



SP-520



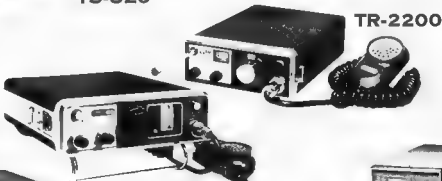
TS-520



VFO-520



VFO-820



TR-2200



TR-7200



TS-700A



**TV-502
TRANSVERTOR**

* DUE TO UNPRECEDENTED DEMAND SOME DELAYS HAVE BEEN EXPERIENCED IN THE SUPPLY OF TS820 HF TRANSCEIVERS

tion a separate charging circuit consisting of D1, a 5k ohm trim pot and a 5.6k ohm resistor places pins 2 and 6 at nearly one-third of supply immediately the timing commences. This is a fairly touchy adjustment, but can be set so that the timing of initial and subsequent cycles is accurate to within a few seconds. If the pot is advanced too far the audio oscillator will be keyed on continuously whenever the pin 4e line is positive with respect to earth.

TR7 and the circuitry around it form a simple regulated power supply. The supply is regulated to ensure that no variation in timing cycles occurs due to variations in the supply voltage. This regulator is capable of handling up to 100 mA with a total regulator dissipation of 300mw. The transistor should be fitted with a small clip-on heat sink to dissipate heat. In this particular unit the regulator has only to supply about 30 mA average. The supply voltage can vary from 10 to 15 volts quite safely.

TR5 and the circuitry around it, including the light emitting diode, form an indicating circuit to show when the circuit is actually timing a transmission. The LED is on whenever the line to pin 4 of IC1 is above earth. The LED is wired into the emitter lead so that the voltage on IC1 pin 4 line is not heavily loaded by TR5's base current. The maximum voltage on the pin 4 line will be about 5.5 volts.

The time constants for the timer are selected by switch S1a and select 2 minute time, 5 minute time, or for test purposes a 2 second on 2 second off timing mode. Switch S1b switches in a capacitor which due to the voltage drop when this capacitor is charging through

resistors in the 8.5 volt line causes TR2 to conduct and set up a 20 second testing routine. In the test position the timer gives 2 second duration bursts of tone every 4 seconds for about 20 seconds until the capacitor in the collector circuit of TR2 is discharged. This test circuit tests all sections of the timer with the exception of the input circuit. Switch S2 is designed to switch the timer from automatic to manual operation. In the manual mode the unit times every 2 or 5 minutes whether there is a transmission or not. Switch S3 is used to reset the timer back to the start position and would probably be used only in the manual mode. It must be pressed for about 2 seconds if the timer is to reset completely. The manual timing feature would be useful for timing old windbag on channel 50—use it to wake yourself every 5 minutes of his own.

The ability to continue timing for 20 seconds in the absence of an input in the automatic mode is not used when the manual mode is selected. If manual operation only is required the first 5 transistors can be deleted and S2 wired between pin 4 of IC1 and earth. Position 1 of the switch would be timer off and position 2 would be timer on. The LED indicator could also be deleted.

COMPONENT VALUES

Electrolytic capacitors have a rather wide tolerance of something like +100 per cent of nominal value to -50 per cent of nominal value. For this reason it is suggested that the timing capacitor from pins 2 and 6 of IC1 should be the Tantalum type. Use a 22 uF and 33 uF tantalum capacitor in parallel, 10VW rating or higher. Other components within the

timer are not unduly critical with the exception of the timing resistors in the charge circuit of the tantalum capacitors. The resistors can be 1/4 watt, and neither these or the other capacitors are critical a preferred value up or down should cause no problem.

SETTING THE TIMING PERIODS

Switch the unit to manual so that it commences timing, with S1 set to test. All being well the oscillator will be pulsed on for 2 seconds every 4 seconds. Advance the 5k ohm trim pot until the oscillator runs continuously, and then back it off until the oscillator just stops and then comes on again in 2 seconds. Now set S1 to 2 minutes, press the reset button S3 for a couple of seconds, release and commence timing the unit with your watch. After a period of time the oscillator will be pulsed on for 2 seconds. Let the unit run for a further period and record the times between first and subsequent tone bursts. Now set S1 to 5 minutes and repeat the process. If the variation is within about 6 seconds or 15 seconds for the respective settings of S1, setting of the 5k ohm trim pot is sufficiently accurate.

Reset S1 to 2 minutes and set the 2 minute trim pot at mid travel. Note the elapsed time obtained over a timing cycle, if the time is longer than 2 minutes reduce the value of the appropriate trim pot, and try again. After a few timing cycles and judicious adjustment of the trim pot the timing between tone bursts should be near enough to 2 minutes. The same procedure is used in setting the 5 minute timer. Unless you are most fortunate the adjustment of the two timing cycles will take about an hour to accomplish.

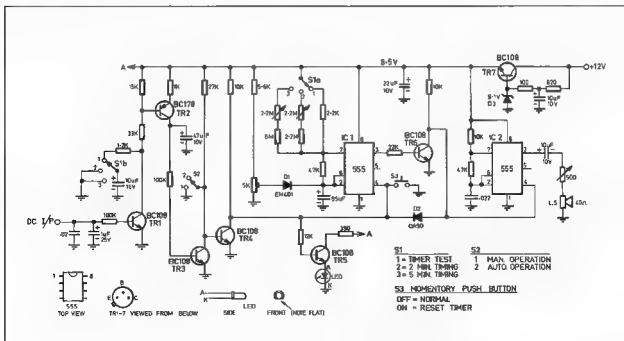


FIGURE 3 — AMATEUR RADIO TRANSMISSION TIMER

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HUSTER MOBILE ANTENNAS

Quality Huster Resonators precision wound with optimum design for each band, adjustable up for lowest vswr

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RM40 (40 meters)	\$25	RM15 (15 meters)	\$19
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BM-1 Bumper Mount \$19

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HM20 (20 meters)	Resonant freq 14.24MHz bandwidth 250KHz \$21
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CM22 Mast for above \$68

Moulded base mount \$17.50



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ATTAS 216X transceiver

IC215 FM PORTABLE

This is IC2015 with FM portable and it puts good times on the go. Change channels, walk thru the park, climb a hill, ride a train. Or you want the IC2015 quality FM communications go right along with you. Long lasting internal batteries make portable FM really portable while scorable features make connection to external power fast and easy

Fully collapsible antenna \$199

15 channels (12 on dial and 3 priority)

Dual power 3 watts high/400 mW low

Lighted dial and meter

36 transistor, 3 FET, 2 IC, 51 diodes

super sensitive receiver

Crystal specifications identical to IC22a

Your new IC215 comes complete with three popular channels, handheld mix with protective case, shoulder strap, connector for external power and speaker 90 day warranty

UNIDEN ... the best value



Surely the best value this HF PLL transceiver provides an unbeatable combination of advanced engineering and unbeatable features

Standard features include

- low filter
- dual RT
- extraordinary receiver sensitivity 10.3uV S/N 10dB and oscillator stability 100Hz/30 min after warm up
- dual RT
- coupling 6148B finals with screen grid stabilization for minimum distortion products
- p.d.'s for easy servicing

A comprehensive range of spare parts is available together with back up service support.

Uniden 2028, complete \$372

Digital VFO \$146

Matching speaker \$46

Vicom for technical support

2M ANTENNAS

NEW JAYBEAM ANTENNAS

2 M FRES

2M/7M Set, 7.84MHz, 1Kw peak	\$26
2M/2M Set, 9.5MHz, 1Kw peak	\$27
10Y/2M 10m, 11.4MHz, 1Kw peak	\$27
10Y/2M 10m, 11.4MHz, 1Kw peak	\$27

MISC

RINGO RANGER ARX 2

1.0m/50m 5/2m mobile whip	\$46
1.0m/50m 5/2m mobile whip	\$26

ASAH

AS2180N 10m 2m 10d gain, 11.4dB gain, 11.4dB gain, 11.4dB gain

AS2180N 2m 10d single boom 11.4dB gain, 11.4dB gain, 11.4dB gain

\$ 54

RAC ANTENNA

RAK TRAP DIPOLES

AL480XN (480m) metal	\$47
AL240XN (240m) metal	\$45
AL120XN (120m) metal	\$48
AL60XN (60m) metal	\$48
AL30XN (30m) metal	\$48
AL15XN (15m) metal	\$48

Mid V N

BALUNS

BL50A quality heavy duty dipole (45W model), 1.8 thru 30MHz, \$2 ohm, vswr better than 1.2 at 30MHz. Housed in metal

enclosure which will withstand 200W maximum

ASBL model for beams, 3.0MHz, max 1Kw \$30

LOW PASS FILTER

TVI FILTER

\$20

Super quality low pass filter (132MHz cutoff) for transmitters

up to 30MHz. Insertion loss under 0.5dB. Impedance match

across 50 ohms. Supplied with 50/235 sockets. Will handle 200W

pop input \$20

1 Kw pop model 10.348 insertion loss \$35

COUPLERS

CL66 500w pop, 3.5 thru 20MHz, input impedance 50 ohms, output impedance 10.000 ohms unbalanced. Includes 4 position

switch. \$129

CL66 500w pop, 3.5 thru 20MHz, input impedance 50 ohms, output impedance 10.000 ohms unbalanced. \$128

CLP216, includes quality swr/loss meter which operates up to 100MHz. The coupler covers 3.5 thru 28 MHz at 500w pop \$210

CLP19 for two meters. Max power 200 pop. output 10.000 ohms unbalanced \$59

HI-MOUNT

1 ECONOMY KEY chromium plated parts with a streamlined

transparent cover. Hard steel contacts \$17

2 QUALITY KEY smart appearance chromium plated housing

mechanism spring adjustment \$19

3 HEAVY DUTY DELUXE KEY fully adjustable ball bearing

shaft, plastic protective cover \$32

4 MANIPULATOR (50d input) for an electronic key

Accurate and useful keying operation allowing saving to

heavy metal plate and frictional rubber ball beneath

periphery of the main base \$30

SWR/PWR METER

POPULAR VCG SWR/PWR METER

The popular VCG covers 3.550 MHz with power measure

ment 12/120 watts. Will handle up to 1000w 50 ohms

impedance. Two meters. This quality low cost instrument

is ideal for the shack or for permanent mobile installation

\$36

The new Osbornlock SWR2000 Deluxe is a professional

SWR bridge using the thru-line principle, covers 3.200

MHz 52/75 ohms, 2 inch unit individually calibrated. Four

power ranges: 2, 20, 200, 2000 watts. \$79

NEW OSKORLOCK DELUXE

JAYBEAM

new!

MBM88/70cm

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The loudspeaker used for the oscillator output is a small replacement 40 ohm job selling for under a dollar. The output volume is set by the series 500 ohm pot (another miniature trim pot). 9.1 volt zeners are not always exactly 9.1 volts. The one used in this project zenered at 8.5 volts so a small silicon diode was added in series with the zener in the conducting direction, and this brought the reference voltage back to 9.1 volts.

Having set the timing on manual switch back to automatic then turn S1 from 5 minutes to test. The unit should now commence the test routine previously described and should cease after about 20 seconds. Place S1 onto 2 minutes timing and touch the active lead of the input pair to the 8.5 volt supply line, the LED should light to indicate that the timer is operating. If the active lead is left connected to the supply line the timer/oscillator will operate after about 2 minutes and will continue to operate for 20 seconds after removing the lead from the supply line.

If the timer is to be operated off a higher voltage than about 9 to 9.5 volts the resistor in series with TR5 should be increased to 470 ohms, so that the LED does not draw above 20 mA.

OPERATING CONDITION TABLE

With TR1 conducting TR2 is also conducting as is TR3, but TR4 is not. TR5 is conducting, IC1 is timing, TR6 is conducting and IC2 is not oscillating. This is the initial start of the timing cycle. When TR1 is off and TR2 is off, TR3 will conduct for 20 seconds after they are switched off. TR4 is off still and the other sections of the timer are as before. When TR3 ceases to conduct due to the discharge of the capacitor in its base circuit, TR4 conducts, TR5 is off, IC1 ceases timing, TR6 is off, and IC2 is not oscillating. Consider now that IC1 has been timing for some time, then the timing period expires. TR6 ceases conduction and voltage is applied to pin 4 of IC2 and it oscillates until IV1 recommences timing after 2 seconds, when TR6 is again conducting with the oscillator control terminal (IC2 pin 4) returned to earth. The timing is done with resistance — capacitance networks and with the exception of TR7, all transistors and integrated circuits are either switched off or switched on hard — this is a digital type of circuit.

SUMMARY

The timer is built on a piece of 0.1 inch pitch veroboard approximately 7 cm square. Some of the features could be omitted if the device were intended to fit inside an FM transceiver — for example. Only one timing cycle would be required and the transceiver speaker could be used for the tone output. The regulated supply for the timer could be taken from a regulated line within the transceiver. The application of voltage from the transmitter itself would initiate the timing so making redundant transistors TR1 to 5 and TR7. Built in a simplified form for some specific purpose it could be made very compact as well as serviceable. The layout of the unit

is not critical. Another feature of the timer is that when it automatically resets itself a short burst of tone is sent out. This is caused by TR4 switching slowly from non-conduction to the saturated condition. If as a newcomer you feel that the circuit is too complex for you to attempt, it can be built in 5 sections, the regulated supply centred around TR7, the audio oscillator IC2 with pin 4 strapped to the positive line, the timing circuit IC1 and TR6, the timing indicator TR5, and the automatic timing and 20 second hold circuit TR1 to 4. The break up of these 5 circuit sections is shown by dotted lines in the circuit diagram. Once each section is operating the next section can be built onto it.

If the timer is built "full circuit" as shown in the circuit diagram, it can assist in the following ways — (1) avoid being timed out on the 2FM repeater, (2) ensure that you do not get a note from the P. & T.D. for exceeding 5 minutes between callsigns, (3) ideal as an egg timer when a quick snack is needed during a contest at 4m, and (4) remind WIA broadcast personnel to give regular callsigns, so setting a good example to other amateur stations.

VHF-UFV AN EXPANDING WORLD

Eric Jamieson, VK5LP
Ferntree, 5233

AMATEUR RADIO BEACONS

VK1	VK1RTA, Canberra	144.475
VK2	VK2WTA, Sydney	82.490
VK3	VK3RTG, Melbourne	144.700
VK4	VK4RLT, Townsville	82.900
VK4RTT, Mt. Mowbray		144.400
VK4RBS, Brisbane		432.000
VK5	VK5VF, Mt. Lofy	144.800
VK6	VK6RTY, Perth	52.300
VK6RTU, Kalgoorlie		52.350
VK6RTW, Albany		88.880
VK6RTX, Albany		144.590
VK6RTY, Perth		88.880
VK7	VK7RNT, Launceston	52.480
VK7RTX, Devonport		144.590
VK8	VK8VF, Darwin	52.280
3D	3D3AA, Suva, Fiji	52.500
JA	JA1YVA, Japan	90.110
HL	HL9WJ, South Korea	90.110
KG6	KG6JDX, Guam	50.110
KH6	KH6EQ1, Hawaii	90.104
ZL1	ZL1VHF, Auckland	145.100
ZL2	ZL2BHF, Upper Hutt	28.170
ZL2VHF, Palmerston North		88.880
ZL2VHF, Wellington		145.290
ZL2VHF, Palmerston North		145.250
ZL2VHF, Palmerston North		431.850
ZL3	ZL3VHF, Christchurch	145.300
ZL4	ZL4VHF, Dunedin	145.400

The Brisbane beacon on the 70 cm band was omitted from the last list so it is now included. Originally set up on 432.000 MHz, by the time you read this it should be operating on its permanent frequency of 432.400.

Aub VK6XY advises all the four beacons in Albany are now located at Mt. Adelaide, about 1 km south of Albany. They are 52.500, 52.590, 144.500, plus the two commercial beacons on 135.5 and 1700 plus MHz. This should prove an

interesting exercise for those taking note of propagation characteristics.

SIX METRES

It was not very long into the New Year before six metres ended its run; in fact the DX as noted here seemed to fade out quickly. However, it was a very good season, and most operators should have had enough interesting contacts to have made their time spent on 6 worthwhile. ... 26/12 sent birthday greetings to Rod VK2BG, (for 25/12, but not heard that day). Rod received the DX this year provided the best circuit ever between VK6 and VK2 or vice-versa he could recall in 17 years. Could not wish Wally VK2WMM at Orange birthday greetings for 1-1-77 as he was not on in fact, very little was heard of Wally at 1.1.77. ... perhaps too much Channel 6 QRM after all! 27/12 Alan VK4ZRF heard the Adelaide FM station on 92.1 MHz at 0200. ... 31-77 Malcolm VK4ZMY who lives 60 miles south of Rockhampton reported hearing a station in F.J. signing 30277 calling a P29 at 0803Z with signal's S 8/9 for half a minute on 52.049 while Gerry P29GR was almost sure he heard JA language on 52.050 at 14:02 on 1/1. This seems possible as 52.049 reported JA's calling on 52.052 at 0130Z in Darwin but too weak to work. ... Peter VK5ZPW reported hearing a beacon or a similar signal on 30/12 on 50.150 about 0130Z. I have heard this signal myself on Peter's tape and it was signed W5L 50.150 84/5. At the same time TV sound signals could be heard on 50.680T anyone any clues to identify it?

Mac VK2ZMO writes from Raymond Terrace with some news of 6 metre activity in that northern part of N.S.W. where 6 metres opened for the first time on 12/10 to VK5, after which the band was open nearly every day with a work except VK1 being worked. VJ2KM was worked twice by Mac while Bill VK2BMX worked him on 3 watts with an IC502 ZL was scarce and only worked by Tony VK2ZTJ who returned to the band after some years with an FT209 (more news from Mac in 144 MHz segment).

Doug VK4ADZ writes advising working between 25/12 and 1/1 the following call areas, VK1 2, 3, 4, 5, 6, 7, 8, P29, ZL1 2, 3 and 4 while VJ2MO was worked on 3/12. On 30/12 Doug heard VK7AE on SSB at 0200Z at 5/5 on 144 MHz but not having rig tuned up could not work him!

144 MHz SCENE

The 144 MHz band has at last had go to rule a degree during the December/January period and the following is a resume as seen from the VK5 point of view. 25/12 Col VK7LZ worked John VK1ZAR. ... 26/12 Peter VK5ZPS worked Ross VK2OED in Perth sign 5 x 2. ... 27/12 Jim VK5ZMJ worked Wally VK6WG and Alan VK6XY — not an easy path for Jim. Ray VK3ATN 5 x 5 at VK5LP, where John VK5ZP worked Alan VK6XY. Gerry VK2ZAT worked Mario VK4MS at 0600Z, but signal weak. Mac then worked Dave VK6VH with signals to 5 x 8. Gerry VK3Z2Z worked VK5ZBH at Ceduna 5 x 7. Ray VK5MP now has 300/400 watts on 144 — should help him to be heard. ... 144 MHz call open between Adelaide and Albany 24/12 the time between 24/12 and 27/12 David VK5KK heard by Peter VK7FS on 31/12 but unable to break in. ... 2/1/77 Alan VK6XY copying VK5VF beacon all day. 23/10 Gerry VK5RD worked VK3AFR VK5ZP VK5ZVY VK3AKO and Alan VK6VH. ... 24/10 VK6RD worked a heap of VK3's and heard VK7ZAH but not worked. ... Peter VK5ZPW hearing Frank VK2ZJ in Broken Hill on Channel 40 on 2/1, 22/1 and 23/1 a most out of the noise. ... Steve VK5ZMJ returning from Melbourne having made 3 passages on 144. ... tacts on 2 metres while there, reports a lot of activity in VK3, and worked three stations in VK7 while at Wilson's Promontory on SSB. ... 144 open again to Albany on 24/1, 25/1 29/1 and 30/1. Col VK6RD worked most of them but not set on 144.

VK3 on 29/1 and 30/1 with stations worked east of Melbourne, Roger VK5MY and others in on that opening too, even VK5LP worked 10 stations which is not bad for my location. — Len VK3ZBJ was the strongest peaking to S8 for over two hours on 29/1.

Probably pide of place for happenings on 144 MHz SSB would have to go to this time for the sporadic E opening at about 0740Z on 31/12 when for a period of about 45 minutes the band opened to 2000 W of it. It was a very good day. SSB was favoured David VK5KK and myself VK5LP with an odd contact being available to a few stations

ELECTRONIC COMPONENTS EMPORIUM

POPULAR INTEGRATED CIRCUITS IN STOCK

CA3012	4.90	CD4026	3.30	CD4724	3.85	LM380N	2.75	MC1499K	2.75	UAA160	3.25
CA3013	5.80	CD4027	1.05	CD40097	1.80	LM381N	3.20	MC1590G	8.75	ULM223C	LM723
CA3014	3.50	CD4028	1.05	CD40100	1.80	LM382N	2.75	MC1591G	2.45	ULM237	3.80
CA3023	6.80	CD4029	2.65	CD40174	2.80	LM387N	3.20	MC1648P	4.90	ULM240	2.45
CA3028A	2.60	CD4030	3.55	CD40175	2.90	LM389K	5.50	MC4044P	4.90	ULM2203	2.45
CA3033	2.20	CD4031	4.20	CD40184	2.90	LM390N	1.20	OM902	3.20	ULM211	5.50
CA3039	2.10	CD4032	2.90	CD40194	2.90	LM555A	1.80	SAJ110	2.50	74C154	5.70
CA3046	LM3048	CD4040	2.50	CD40195	2.90	LM558N	2.95	SAK140	2.90	74C207	2.50
CA3048	1.70	CD4041	2.50	CD40196	2.90	LM559N	1.80	SAK150	2.90	74C208	2.50
CA3059	8.40	CD4042	9.50	CD40197	2.90	LM565N	3.50	SAK160	1.50	74C209	85
CA3060	8.40	CD4043	2.25	CD40198	2.90	LM566N	3.50	SAK170	1.50	74C210	85
CA3079	4.40	CD4044	2.25	CD40199	2.90	LM567N	3.50	SAK180	1.50	74C211	85
CA3081	4.40	CD4045	2.25	CD40200	2.90	LM568N	3.50	SAK190	1.50	74C212	85
CA3081*	2.73	CD4046	3.20	CD40201	2.90	LM569N	3.50	SAK200	1.50	74C213	85
CA3082	2.70	CD4047	1.95	CD40202	2.90	LM570N	3.50	SAK210	1.50	74C214	85
CA3083	2.90	CD4048	80	CD40203	3.00	LM710CN	1.25	SAK220	1.50	74C215	85
CA3088	LM3088	CD4050	80	CD40204	3.00	LM710CN	1.25	SAK230	1.50	74C216	85
CA3088*	LM3088	CD4051	2.25	CD40205	3.00	LM722N	1.70	SAK240	1.50	74C217	85
CA3090	8.80	CD4052	2.25	CD40206	2.60	LM723N	1.25	SAK250	1.50	74C218	85
CA3091*	18.00	CD4053	2.25	CD40207	2.60	LM724N	1.25	SAK260	1.50	74C219	85
CA3120F	4.50	CD4054	1.45	CD40208	2.60	LM725N	5.80	SAK270	1.50	74C220	85
CA3127F	4.50	CD4055	1.45	CD40209	2.60	LM726N	5.80	SAK280	1.50	74C221	85
CA3128E	8.00	CD4056	1.45	CD40210	2.60	LM727N	5.80	SAK290	1.50	74C222	85
CA3130T	2.25	CD4057	1.45	CD40211	2.60	LM728N	5.80	SAK300	1.50	74C223	85
CA3130T*	2.25	CD4058	1.45	CD40212	2.60	LM729N	5.80	SAK310	1.50	74C224	85
CD4000	5.30	CD4059	1.45	CD40213	2.60	LM730N	5.80	SAK320	1.50	74C225	85
CD4001	2.50	CD4060	1.45	CD40214	2.60	LM731N	5.80	SAK330	1.50	74C226	85
CD4002	2.50	CD4061	1.45	CD40215	2.60	LM732N	5.80	SAK340	1.50	74C227	85
CD4003	2.50	CD4062	1.45	CD40216	2.60	LM733N	5.80	SAK350	1.50	74C228	85
CD4004	2.50	CD4063	1.45	CD40217	2.60	LM734N	5.80	SAK360	1.50	74C229	85
CD4005	2.50	CD4064	1.45	CD40218	2.60	LM735N	5.80	SAK370	1.50	74C230	85
CD4006	2.50	CD4065	1.45	CD40219	2.60	LM736N	5.80	SAK380	1.50	74C231	85
CD4007	2.50	CD4066	1.45	CD40220	2.60	LM737N	5.80	SAK390	1.50	74C232	85
CD4008	2.50	CD4067	1.45	CD40221	2.60	LM738N	5.80	SAK400	1.50	74C233	85
CD4009	2.50	CD4068	1.45	CD40222	2.60	LM739N	5.80	SAK410	1.50	74C234	85
CD4010	2.50	CD4069	1.45	CD40223	2.60	LM740N	5.80	SAK420	1.50	74C235	85
CD4011	2.50	CD4070	1.45	CD40224	2.60	LM741N	5.80	SAK430	1.50	74C236	85
CD4012	2.50	CD4071	1.45	CD40225	2.60	LM742N	5.80	SAK440	1.50	74C237	85
CD4013	2.50	CD4072	1.45	CD40226	2.60	LM743N	5.80	SAK450	1.50	74C238	85
CD4014	2.50	CD4073	1.45	CD40227	2.60	LM744N	5.80	SAK460	1.50	74C239	85
CD4015	2.50	CD4074	1.45	CD40228	2.60	LM745N	5.80	SAK470	1.50	74C240	85
CD4016	2.50	CD4075	1.45	CD40229	2.60	LM746N	5.80	SAK480	1.50	74C241	85
CD4017	2.50	CD4076	1.45	CD40230	2.60	LM747N	5.80	SAK490	1.50	74C242	85
CD4018	2.50	CD4077	1.45	CD40231	2.60	LM748N	5.80	SAK500	1.50	74C243	85
CD4019	2.50	CD4078	1.45	CD40232	2.60	LM749N	5.80	SAK510	1.50	74C244	85
CD4020	2.50	CD4079	1.45	CD40233	2.60	LM750N	5.80	SAK520	1.50	74C245	85
CD4021	2.50	CD4080	1.45	CD40234	2.60	LM751N	5.80	SAK530	1.50	74C246	85
CD4022	2.50	CD4081	1.45	CD40235	2.60	LM752N	5.80	SAK540	1.50	74C247	85
CD4023	2.50	CD4082	1.45	CD40236	2.60	LM753N	5.80	SAK550	1.50	74C248	85
CD4024	2.50	CD4083	1.45	CD40237	2.60	LM754N	5.80	SAK560	1.50	74C249	85
CD4025	2.50	CD4084	1.45	CD40238	2.60	LM755N	5.80	SAK570	1.50	74C250	85
CD4026	2.50	CD4085	1.45	CD40239	2.60	LM756N	5.80	SAK580	1.50	74C251	85
CD4027	2.50	CD4086	1.45	CD40240	2.60	LM757N	5.80	SAK590	1.50	74C252	85
CD4028	2.50	CD4087	1.45	CD40241	2.60	LM758N	5.80	SAK600	1.50	74C253	85
CD4029	2.50	CD4088	1.45	CD40242	2.60	LM759N	5.80	SAK610	1.50	74C254	85
CD4030	2.50	CD4089	1.45	CD40243	2.60	LM760N	5.80	SAK620	1.50	74C255	85
CD4031	2.50	CD4090	1.45	CD40244	2.60	LM761N	5.80	SAK630	1.50	74C256	85
CD4032	2.50	CD4091	1.45	CD40245	2.60	LM762N	5.80	SAK640	1.50	74C257	85
CD4033	2.50	CD4092	1.45	CD40246	2.60	LM763N	5.80	SAK650	1.50	74C258	85
CD4034	2.50	CD4093	1.45	CD40247	2.60	LM764N	5.80	SAK660	1.50	74C259	85
CD4035	2.50	CD4094	1.45	CD40248	2.60	LM765N	5.80	SAK670	1.50	74C260	85
CD4036	2.50	CD4095	1.45	CD40249	2.60	LM766N	5.80	SAK680	1.50	74C261	85
CD4037	2.50	CD4096	1.45	CD40250	2.60	LM767N	5.80	SAK690	1.50	74C262	85
CD4038	2.50	CD4097	1.45	CD40251	2.60	LM768N	5.80	SAK700	1.50	74C263	85
CD4039	2.50	CD4098	1.45	CD40252	2.60	LM769N	5.80	SAK710	1.50	74C264	85
CD4040	2.50	CD4099	1.45	CD40253	2.60	LM770N	5.80	SAK720	1.50	74C265	85
CD4041	2.50	CD4100	1.45	CD40254	2.60	LM771N	5.80	SAK730	1.50	74C266	85
CD4042	2.50	CD4101	1.45	CD40255	2.60	LM772N	5.80	SAK740	1.50	74C267	85
CD4043	2.50	CD4102	1.45	CD40256	2.60	LM773N	5.80	SAK750	1.50	74C268	85
CD4044	2.50	CD4103	1.45	CD40257	2.60	LM774N	5.80	SAK760	1.50	74C269	85
CD4045	2.50	CD4104	1.45	CD40258	2.60	LM775N	5.80	SAK770	1.50	74C270	85
CD4046	2.50	CD4105	1.45	CD40259	2.60	LM776N	5.80	SAK780	1.50	74C271	85
CD4047	2.50	CD4106	1.45	CD40260	2.60	LM777N	5.80	SAK790	1.50	74C272	85
CD4048	2.50	CD4107	1.45	CD40261	2.60	LM778N	5.80	SAK800	1.50	74C273	85
CD4049	2.50	CD4108	1.45	CD40262	2.60	LM779N	5.80	SAK810	1.50	74C274	85
CD4050	2.50	CD4109	1.45	CD40263	2.60	LM780N	5.80	SAK820	1.50	74C275	85
CD4051	2.50	CD4110	1.45	CD40264	2.60	LM781N	5.80	SAK830	1.50	74C276	85
CD4052	2.50	CD4111	1.45	CD40265	2.60	LM782N	5.80	SAK840	1.50	74C277	85
CD4053	2.50	CD4112	1.45	CD40266	2.60	LM783N	5.80	SAK850	1.50	74C278	85
CD4054	2.50	CD4113	1.45	CD40267	2.60	LM784N	5.80	SAK860	1.50	74C279	85
CD4055	2.50	CD4114	1.45	CD40268	2.60	LM785N	5.80	SAK870	1.50	74C280	85
CD4056	2.50	CD4115	1.45	CD40269	2.60	LM786N	5.80	SAK880	1.50	74C281	85
CD4057	2.50	CD4116	1.45	CD40270	2.60	LM787N	5.80	SAK890	1.50	74C282	85
CD4058	2.50	CD4117	1.45	CD40271	2.60	LM788N	5.80	SAK900	1.50	74C283	85
CD4059	2.50	CD4118	1.45	CD40272	2.60	LM789N	5.80	SAK910	1.50	74C284	85
CD4060	2.50	CD4119	1.45	CD40273	2.60	LM790N	5.80	SAK920	1.50	74C285	85
CD4061	2.50	CD4120	1.45	CD40274	2.60	LM791N	5.80	SAK930	1.50	74C286	85
CD4062	2.50	CD4121	1.45	CD40275	2.60	LM792N	5.80	SAK940	1.50	74C287	85
CD4063	2.50	CD4122	1.45	CD40276	2.60	LM793N	5.80	SAK950	1.50	74C288	85
CD4064	2.50	CD4123	1.45	CD40277	2.60	LM794N	5.80	SAK960	1.50	74C289	85
CD4065	2.50	CD4124	1.45	CD40278	2.60	LM795N	5.80	SAK970	1.50	74C290	85
CD4066	2.50	CD4125	1.45	CD40279	2.60	LM796N	5.80	SAK980	1.50	74C291	85
CD4067	2.50	CD4126	1.45	CD40280	2.60	LM797N	5.80	SAK990	1.50	74C292	85
CD4068	2.50	CD4127	1.45	CD40281	2.60	LM798N	5.80	SAK1000	1.50	74C293	85
CD4069	2.50	CD4128	1.45	CD40282	2.60	LM799N	5.80	SAK1010	1.50	74C294	85
CD4070	2.50	CD4129	1.45	CD40283	2.60	LM800N	5.80	SAK1020	1.50	74C295	85
CD4071	2.50	CD4130	1.45	CD40284	2.60	LM801N	5.80	SAK1030	1.50	74C296	85
CD4072	2.50	CD4131	1.45	CD40285	2.60	LM802N	5.80	SAK1040	1.50	74C297	85
CD4073	2.50	CD4132	1.45	CD40286	2.60	LM803N	5.80	SAK1050	1.50	74C298	85
CD4074	2.50	CD4133	1.45	CD40287	2.60	LM804N	5.80	SAK1060	1.50	74C299	85
CD4075	2.50	CD4134	1.45	CD40288	2.60	LM805N	5.80	SAK1070	1.50	74C300	85
CD4076	2.50	CD4135	1.45	CD40289	2.60	LM806N	5.80	SAK1080	1.50	74C301	

In Adelaide I worked VK2BQJ, VK2MTH, VK2ZPJ, VK2K12, VK2ZRH, VK1M6 (twice), VK1ZAR and VK1ED and I believe David worked along similar lines. The VK2 signals were up to 57/76 while the VK1 signals were up to 55. My first contact with VK2ZRH took exactly 12 seconds for me to exchange Ross Hull numbers both ways, so we did not waste any time — no one ever wastes time with unnecessary chatter on a 144 MHz ES opening!

There have been quite a number of openings in other States but as I have no specific details I cannot say much about them. One interesting observation I would like to make is that this season VK1, VK2, VK3, VK4, VK5, VK6 and VK7 have a lot worked on 144 MHz SSB from VK5. This would not have been thought possible some years ago, and surely indicates a greater awareness by many operators of the part that 144 MHz plays during the summer 52 MHz DX season, and with increasing numbers of better SSB rigs now coming on the air, this trend must surely increase. There are quite a few operators around Australia who now only require a VK8 for Worried A1 States on 144 MHz — how long before that can be achieved? And, despite the long distances which can be covered with the nominal 10 watts output of many transceivers, it is still the stations who feed this 10 watts into good leasins who take the cream of any opening, and are a ways worked first, so if the opening is short, the small station operator may miss out — it's unfortunate but true!

432 MHz JOTTINGS

The 70 cm band has come in for its own share of long distance contacts and these too seem to be on the increase. Again very little has been heard on what has been achieved in other States, but from the angle of the southern States VK3, VK5 and VK6 the following is a resume of what has happened.

27/12 David VK6SK worked VK8WG, VK8KZ, VK2ZED and VK2ZBH with signals to 5 x 5. About 2002 Ray VK3CN calling VK6SK, VK6SKY, VK5SV and 56 here at VK5LP. Peter VK5ZPS worked Wally VK6WG on 26/12 and 27/12 5 x 4. Roger VK5NY moved also. 25/1 Peter VK5ZPS 8+ in Albany. 26/1 Roger VK5NY worked VK6SK and VK6Y. 26/1 was hearing less to 82 with carrier running but no contact made.

1288 MHz RECORD

See spec ad box. Looking back who could but say it had not been a great year. On 52 MHz on 26/12 and 27/12 I worked over 100 stations on that band, and there were plenty of others in other areas who worked considerably more judging from their Ross Hull scores. On 144 MHz we can look at the great area covered firstly by Et openings, and then some good pavers on and ducting openings along the southern coastline. 432 was enjoyed by many ages along the southern coastline with a 1296 rate be opened its heart to provide what is likely to be a world record.

GENERAL NEWS

Doing with 2 metres, Mac VK2ZMO in his latest is concerned at the possible 3 ds effects stemming from the use of the New South Wales band on Channel 5 to 5A. He reports the 144 MHz band a very dead in his area and could be worse still when SA gets going at full power. Already tests indicate problems with other commercial gear in the same area and grouped around the same transmitting mast. Mac joins with our Riverland boys in hoping SA operating will not entirely kill 144 MHz activity as VK5 have a Channel 5A up Lixion way on the Murray.

Doug VK4AGC is the Publicity Officer for the Brisbane VHF Group and advises some details of the LHF band. Br band is a solid state transmitter delivering 8 to 10 watts output through a type cavity filter and via helix to a cover and type aerial to give omnidirectional radiation with horizontal polarisation. Frequency at the time of writing was 432.000 MHz and will eventually be changed to 432.400 (which is presently listed at the start of this column). Location is Winton Heights on the north side of the city centre and gives coverage to almost all of the greater Brisbane area. Call sign VK4RBB.

Doug also gives details of their repeater VK4RBB which is not in operation at the time (time of writing). Said state Rx/Tx and integrated circuit control logic. Tx delivers 10 watts v.a filters to 3 dB gain vertical and Rx also fed from separate vertical v.a filters. Eventually a

complete duplexer will be fitted. Channel 352/852 operation. Planned location is Red Hill, just out of centre of the city on northern side. The repeater is expected to be in its final site and in full operation by late March.

Winston VK7EM writes to advise that the north-west branch 70 cm beacon is off the air until further notice. Almost six months to the day after going into service, the transmitter was damaged when 22 kV power lines fell across the 240 volt-line to the shack. It appears the transmitter has only been damaged, and the wiring inside the hut as well as the switchboard, power points etc, are a charred mess.

Winston remarks however, they were a bit lucky in that the hut and equipment was not totally destroyed as one of the corner studs supporting the fuse box caught fire. All this happened during a wind storm in early December. It may be some time before VK7RTW is back on the air, and advice will be forwarded when again operational.

I note from the pages of the Gold Coast Radio Club Monthly Newsletter that Martin VK4ZIL had more than 1000 contacts in 3 months to January. That's better than 10 a day every day, and apparently the voice is still holding it. Also noted VK4KHP having made 2 metre contacts to Bundaberg and Mackay — the latter would be very good at over 400 miles, and indicates the north-south path is not a dead loss!

1296 MHz CONTACT

On 25th February, 1977, at 0100Z, Ray VK5QR in Adelaide contacted Wally VK6WG in Albany on the 1296 MHz band for a two-way QFT. Ray copied Wally who used CW at 147, and Wally gave Reg 5 x 4 for his SSB. Present rough calculations indicate a distance of about 1800 km or 1100 miles, and it seems likely to be a world record.

Equipment used: VK5QR: 1296 meter ultra-low pre-amp, to 26 MHz IF amp. Transmitter used home brew 9 MHz crystal filter, giving a processed 9 MHz signal (QFT Oct. 1976) which includes tripling to allow for SSB readability, to 26 MHz, then straight into normal home brew transmitter. Output really heard at 432 MHz at 24W into varactor tripler 18 watts output at 1296, 60 feet of coaxial cable giving about 4 to 5 watts output to a 3 foot dish at 35 feet.

VK6WG Receiver a Microwave Module converter with pre-amp feeding into FTDX100 transceiver, transmitter being a tripler using 3CX150A5 with 600 volts on anode at 70 mA, output unknown, fed to a 3 foot dish on tower (Probably about same power as dish as Reg).

Both Ray and Roger VK5NY copied call signs from Wally the previous evening, but were unable to make it for two way contacts. So Reg's report really has to be counted as one of the unluckiest people around at the moment!

The amateur fraternity congratulate the operators for this outstanding contact, particularly for Ray to place SSB on 1296. An enormous amount of hard work went into the whole operation, not only at the time, but for much time beforehand by both parties, and when the final details come out, it will rank as a great achievement.

Graham VK6BY after a trip to Victoria confirms former mention of the high level of SSB activity on the lower part of 2 metres in Melbourne, with 144 being the call frequency, and once contact is established then moving to another frequency. He mentions also QRM on 70 cm ATV due to amount of activity, and reports on the excellence of the ATV equipment being used. But after going all that way and proof of just how much VK6Y is doing for the VHF Group with UHF even with the active VHF Group. Not from VHF VHF Group Newsletter.

The following table sets out the Terrestrial Two-way Records for VHF/UHF operation and originating in the January 1977 issue of QST.

6 metres	LU3EX	J-A5FR	12 000 miles	—
242/3/56				
2 metres	WABJRA	— KH6GRL	2591 miles	—
29/17/73				
144 metres	W6NLZ	K-5UK	2540 miles	—
22/6/58				
70 cm	WODR	— K1PXE	120 miles	— 16/8/71
23 cm	K5LL	— K4NTD	847 miles	— 27/1/75
13 cm	G3LOR	— Q280R	477 miles	— 30/6/76
8 cm	Z-2WB	— ZL3WV	278 miles	— 18/2/75
4 cm	W6FIE/K6H	J-5	214 miles	— 18/6/70
3 cm	G4BRS	— G4MOXX	324 miles	— 14/8/76
125 cm	G3BNL	— G3CEZ	96 miles	— 14/9/75

It is interesting to observe the 70 cm record as being 1210 miles. I was of the opinion that for years this had been held by W6NLZ and KH6GRL at 2540 miles, in company with a mile d distance and contacts by VK5ZRH on 144 and 220 MHz. It seems the 70 cm record at that figure may have been disavowed and is presently set at 1210 miles notwithstanding however n the 70 cm Standings List in QST of January 1977 there are no less than 12 stations listed as having made 2000 miles or more, with W1AAJ and K2CBA heading the list with 2670 miles, and three others on 2600 miles. Maybe none of these people have claimed records, but if any of them who they will eclipse the distance set between us VK5ZRH and W6NLZ. In any which on present actual listings is well above the current world claimed record.

The distance of approximately 1100 miles as recorded in these notes for the 1296 MHz (23 cm), contact between VK5QR and VK6WG will however, surely be a world record, if the 847 miles of the present listing is any guide.

A letter has arrived from Ray Ark K5ZMB, No 1 SMIRK, advising of a 24 hour day beacon to operate from the north coast of Brittany, France, signing F37HF, operating 50.1 MHz with 100 watts to be increased to 400/500 or 1 KW if no big interference problems crop up!

Keying FSK, 100 Hz shift call sign transmitted every 50 seconds. It is to start in April to mid-August of this year, and will be repeated during following years if possible. Antenna will be centred on Central England, and the copy of the beacon in VK or ZL in particular are asked to pass on date, time RST, location and call sign of station receiving it, to any US station on any amateur band you can. Ask the US station to pass that info to K5ZMB via phone patch call. Last year's number 8512-2575: nothing seems to be impossible these days or six metres, so you hear DX operators might look for the beacon particularly if it gets into the higher power bracket!

Ray also requests me to notify any VK or ZL stations who have heard JA and collected 3 of their SM/RK numbers to submit details to him Ray Ark, K5ZMB, 7158 Stone Fence Drive, San Antonio Texas 78227. I only recall 3 contacts with foreign SM/RK members. There are now about 15 SM/RK members in Japan, and I have a couple of KG's and Peter VK6ZDY. If in contact with A stations ask them about a SM/RK number.

In keeping with VK operators on 8 metres which have been very good this year, say mention to the VHF Group in the US band group standing. Many stations worked the 50th State, Ray worked 7 colonies, Canada Mexico, Cayman Is., Bahamas, Guatemala, Puerto Rico and US. Others a so worked VZ2Z, ZJ20W, VPLAW, K6E 12 JA's worked K6JL. He concludes on a note that much Middle East TV was being copped in France. So those 50 MHz signals sure got around. Thanks for the news Ray!

Well, that's a pretty fair coverage of what has taken place around the country during the past month or so. If I go on too far there will be nothing left for next month. I conclude with the thought for the month "Liberty is always dangerous, but it is the safest thing we have."

The Voice in the Hills

QSP

1977 SUBSCRIPTIONS

Amateurs who have renewed your W A subscription for 1977 already. For those who have not yet renewed please note that address labels for AR will cease automatically for 1977. Missing AR's may not be available after the month of issue because the financial situation does not permit too many "overs" being printed.

IONOSPHERIC PREDICTIONS

Len Poynter, VK3ZGP

PREDICTIONS

It would appear that there is sufficient evidence to suggest that the long awaited Cycle 21 is finally starting to evolve. Increasing numbers of the new spots (in the higher altitudes) are appearing and the older cycle 20 spots are slowly disappearing. The 2800 MHz flux measurements are also slowly moving upwards. Daily figures around the 80 are now (in late January) more common and there are significant improvements over many paths on 20 and 10 metres with 10 metres showing a fair amount of improvement.

One interesting event was seen in the evening of December 29, 1976. A magnetic storm of moderate severity actively commenced at 2037 UTC on December 28th. The final recordings (at 3 hour intervals) were K5, K6, K8, K4 periods 00-03, 03-09, 09-12. The results on 21 MHz were quite noticeable in the period 09-12 UTC.

Signals from around Melbourne normally 53-5 were within seconds transformed in 89 + 20-30 dB on 5 meter scales. Very short skip up to 250 km was very pronounced with up to 1000 km not far behind. The next phase was up to 7000 MHz into Central Europe with one Maltese station providing plenty of competition to the novice segment of 21 MHz. Things were so hectic below 21 200 MHz that I omitted to listen above to find out what was going on there.

Still later on January 29 1977, another storm commencing at 2013 UTC on January 28th had the opposite effect causing very severe attenuation on signals over a 50 km path across Melbourne for a period of about 10 mins around 1900 UTC. Having spent such a large amount of time on 21 MHz I am surprised at the regularity of path openings over the period Oct. onwards. Have now discovered a cycle of openings into Melbourne which the amateur operator can well utilise. The cycle is at the stage reliable for at least 3 out of 4 weeks though not necessarily in rotation.

For the novice operators, it is proving quite a boon and the occupancy of the portion 21 160-21 200 MHz is very high, often to the complete exclusion of the portion around 21 300 MHz. Some of the more active ones are up around the 40 countries worked with their QRP and often simple antennas.

Summary of 1976 Sunspot Data

Monthly Mean: 1/76 = 8.6, 2/76 = 4.8; 3/76 = 2.0; 4/76 = 18.5; 5/76 = 12.7; 6/76 = 12.4;

7/76 = 2.1; 8/76 = 16.8; 9/76 = 13.4; 10/76 = 21.8; 11/76 = 5.5; 12/76 = 15.

Running Smoothed Mean: 15.5, 13.4, 12.4; 13.0;

12.7 (9), 17.9 (9), 19.1 (9); 18.1 (8).

Predicted Running Smoothed Mean: 1/77 = (9),

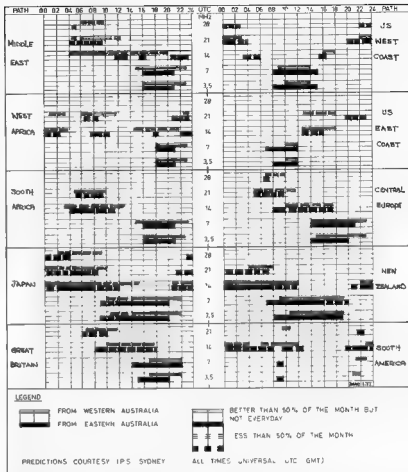
8, 3/77 = (9), 4/77 = (8) 5/77 = 1

6/77 = (9).

1976 2800 MHz Solar Flux: 1/76 = 74, 2/76 = 70;

3/76 = 77, 4/76 = 76; 5/76 = 71, 6/76 = 71;

7/76 = 67, 8/76 = 75, 9/76 = 73, 10/76 =



76, 11/76 = (77); 12/76 = (79).
Predicted 1977: 1/77 = (81); 2/77 = (82), 3/77 = (83); 4/77 = (84); 5/77 = (85); 6/77 = (86); 7/77 = (87); 8/77 = (88); 9/77 = (89); 10/77 = (90); 11/77 = (90), 12/77 = (92).

On predictions it would appear that to reach the 8 the remainder of the year will have to produce very low activity on a monthly basis through to the end of 1977. Given an average similar to 1976 the running mean might remain somewhere

about the 10 mark before lifting off again - providing sunspot activity does in fact improve during 1977.

With a predicted top of 40 for the next two maxima does not raise much enthusiasm from those who worked through the 1958 and 1959 peaks. Guess the newcomers will have to learn a little more about the 'tricks of the trade' to fully utilise the higher frequency bands.

Y3's VK3ZGP/NAC

LETTERS TO THE EDITOR

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publishers.

The Editor
Amateur Radio

Dear Sir,

On behalf of the members and Council of the WIA (SA Division) wish to express deep disappointment at the way in which the results of the 1976 Remembrance Day Contest were published in the December issue of Amateur Radio. The fact that VK5 and VK6 had won the contest was given no mention at all, except in the results table, and that it was our 5th successive win was ignored altogether.

We in the SA Division are justly proud of our record in the R.D. Contest, and it is a pity that

the publication of the results was done in such a low key manner. Our success does not come by accident but as a result of careful planning and adequate publicity leading up to the contest.

Contrary to some comments heard, the scoring system does not favour us in any way, the secret of our success is the high participation we are able to achieve. VK4 made an effort this year and came very close to topping us. I hope that next year all Divisions will make a maximum effort and by thus doing help to keep the "R.D." the premier contest on the Australian calendar.

Yours sincerely,

Garry H. Harden VK5ZK, President
(S.A. Division)

(Sorry - our slip was showing - Ed.)

The Editor,

Dear Sir,

We in VK7 have almost become resigned to not ever winning the RD Contest again, especially after the selfish attitude of other Divisions disallowed the use of Repeaters by our VHF operators.

The placing of VK8 above VK7 in the 1976 results started a study of the present award score calculation. In the 1976 results VK7 participation was higher than VK6, the top six logs average was higher average score of all logs was higher, but we ended up 1000 points below in the final calculation. How come?

The calculation of the trophy score is done by adding the average of the top six logs to a bonus calculated by dividing the number of logs entered by number of licences in cell area multiplied by total points from all entrants. This last factor can be amplified to average score of all entrants times number of logs submitted. This means that the final result depends on the square of the logs submitted. How can the smaller Divisions ever win? With the same average log scores, to equal VK5, VK7 participation would have had to be 48 per cent and VK1 would have needed 63 per cent.

The problem is, then, the so-called bonus score, which is not a bonus as in the VK5 score it accounts for 82 per cent of final score. A more realistic method would be to derive the bonus by dividing total points by number of licences. This

would remove the square factor of logs submitted and still depend on participation. If we apply this method to the last contest VK4 would have won due to high top 3 as logs with participation on only 14 days, then VK5. Another possibility would be to allocate points to the various sections.

participation top six logs average, average of 1 logs, and derive the final result from these points.

It is not my object to derive a new system.

This is up to the contest manager. VK7 agenda item will be submitted to the next Federal Convention that we do this.

P. D. Frith VK7, Federal Councillor. ■

S.A.

MICROPROCESSOR GROUP

During the second half of 1978, I became evident from contacts on the 2 metre repeater that a growing number of members of the South Australian Division of the W.A. were involved or interested in the amateur applications of microprocessors. In October enthusiasts were invited to attend an informal meeting at the S.A. Division Headquarters Building in West Thebarton Road and the attendance of 20 people encouraged the formation of a Microprocessor Group. We believe that this is the first such group within the Wireless Institute of Australia.

At the October meeting it was decided to convene the Group regularly on the second Friday in each month and a small steering committee was elected to start the organisation of meetings and group construction of projects. Since then, technical lectures have been held in November (on Numbering Systems by Roger Marks VK5) and in December (on Microprocessor Architecture and Bus Interfacing by Howard Harvey VK3ZEB) while the committee has met to formulate plans for group construction of projects on terminals, cassette interfaces and standardised microprocessor systems. A constitution has been drawn up for the Group, approved by the Council of the S.A. Division of the W.A. and was adopted by the Group at the December meeting.

Group membership has grown rapidly to just over 80, which has generated interest in its activities within trade circles in Adelaide. The February meeting will consist of the first AGM (hopefully shortly followed by a technical lecture and equipment demonstration by the late engineer A. V. FERGUSON Pty Ltd while the Motorola distributors (Tota Electronics) have asked for a similar session with their range of equipment at the May or June meeting. Two other manufacturers agents are also interested in providing technical lectures which will be free of charge to the Group who would normally be quite expensive for individual use.

Happily, the Group consists of amateurs with a broad spectrum of interests and knowledge of microprocessor systems, ranging from those who realise that they will learn more about this new and exciting field of activity to those who are actively engaged professionally in engineering applications of microprocessors and computers. We are able to draw upon the strengths already existing in the membership for what promises to be a very full programme of meetings in 1977.

In March and April, the Group will hold elementary programming seminars which with small group tutorials and working microprocessor systems will enable a majority of members to gain some hands-on experience of programming and operating. Following further lecture sessions, it is proposed to repeat the programming seminars later in the year.

Some critics of the Group have questioned where microprocessors fit into amateur radio activities (which sounds very similar to early criticism of transistors, SSB, RTTY, commercial transmitters, buy-back, satellite keyers, etc.) and other new-fangled device that makes operating easier or more interesting) but in fact the potential applications of microprocessors by amateurs are limited only by the imagination and ingenuity of the user. The foregoing list of applications is by no means exhaustive, and any amateur who can't think up a couple more should join the Group (if he lives in South Australia) to have his imagination stimulated.

Silent, static RTTY

Speed and code conversion for RTTY

High speed CW transmission and reception

Antenna tracking for FME and Oscar

Station monitoring and control for SHF meteor-buoy comms.

VHF repeater supervision and control

Automatic station contest logging and scoring

SSV signal processing and caption generation

There are potentially major benefits to members in forming a microprocessor group in shared learning, programming, task purchasing and leverage on manufacturers. We would like to think that groups will be formed by other Divisions of the WIA so that the benefits may be shared. If you are interested, have your Divisional Secretary write to the Microprocessor Group, Wireless Institute of Australia, Box 1234 G.P.O. Adelaide 5001, and we will be pleased to send a copy of our constitution, news-letters, lecture programme and precise notes to help you get started — you will be surprised how many fellow-amateurs will want to join.

S.A. Division members should address enquiries about Group membership to VK5MG or VK5PE. Meetings are held in the Burley Griffin Building (at the rear of the West Thebarton Council Depot) in West Thebarton Road on the second Friday of each month. The February meeting will commence at 7.30 p.m. but other meetings start at 8 p.m. — Clive M. Pearson VK5PE, Box 207, P.O. Gawler, 5118. ■

INTRUDER WATCH

All Chandler, VK3LC

1530 High Street, Glen Iris, 5146

Further to my previous reports regarding the pulse transmissions so well documented by our Observers over the past few months I quote two sources of information and hope that the last time I have to talk about this interference.

The following quotation was received from K6KA, and was sent by telex from Moscow to the FCC — "Radio installations operated in the high frequency bands are being experimented with in the Soviet Union, and these experiments could possibly cause interference of short duration to your radio facilities. We are now taking action in order to decrease the eventual interference. Your reports (my underline) will be attentively studied by Military or Postal Telecommunications of the USSR". What an understatement!

On the same subject I quote from "Radio Communication of January, 1977" — "The powerful interference from the USSR noted previously has, at the time of writing, become less frequent in appearance but has not yet ceased. The signal caused a half-page report in the "Washington Star" which was picked up by most of the USA press outlets. This report extensively quoted the IARU's co-ordinator. Feedback from the Home Office following reports by the RSGB Intruder Watch organiser, shows that telex messages have been sent to the USSR, China and Egypt asking for the cessation of interference in exclusive amateur bands. In several cases the USSR based interference has ceased but there has been no success following representations at Peking. In addition to its primary functions, the Intruder Watch is a source of valuable information which is being prepared for WARC 1979. Any administration unwise enough to refer to the 7 MHz band as an exclusive amateur service allocation can be given an answer backed by facts and evidence."

As well as the USA and European countries, that in Region 2 and Region 1, we in Region 3 have systematically reported this QRM as well as other types of interference, notably broadcasting in the 7 MHz band, but we still need more Observers. I don't know why I have to re-iterate this plea so often. It baffles me completely why so many members will not take just a few minutes occasionally to scan the bands for intruders or, at least, when they hear an intruder, not report the occurrence to their appropriate co-ordinator is it apathy or just plain forgetfulness? ■

PROJECT AUSTRALIS

David Hull, VK3ZDH

NEW SATELLITES

Approximate launch dates have been announced for the first batch of amateur satellites. AOE is another low altitude satellite designed to provide continuation of the ARRL Education program which is used as the justification for so much of AMSAT's funds. It will have a period of 102 mns and Inclination of 90° and a 915 km apogee. It may fly as early as June 1977 but will probably be launched on the 1st or 2nd half of the year. The first of the phase 3 satellites, orbit satellites should fly from the European Test Range in French Guiana aboard the second test flight of the ESRC "Ariane" satellite in December 1979. Another intriguing possibility is the chance of a ride aboard a geostationary satellite over the South Pacific. More on this as the data come to hand.

PROBLEMS

AOT experienced a period of mode switching over the Christmas-New Year period attributed to climatic conditions in the northern hemisphere. Bob Arnold VK3ZEB reports that it seems to have settled down since it is period. I hope that this "disease" was only temporary.

Of a more serious nature we have noticed a change for the worse in the condition of AOE's battery. Telemetry readouts that one of the NiCd cells in the upper half of the battery has failed and is not accepting charge as well as it should. This has meant a more tighter control over the on/off cycle and the 3rd has had to be switched "off" occasionally when it should be "on". Apologies for any inconvenience.

APRIL 1977

OSCAR 6

Orbit Time Long

Date No. Z W

1 20381 01 22 60.80

2 20403 02 22 65.80

3 20416 01 17 79.55

4 20428 01 17 74.55

5 20441 01 12 78.30

6 20483 01 12 63.30

7 20496 01 07 77.08

8 20478 00 07 62.08

9 20491 01 02 78.80

10 20503 01 02 62.80

11 20516 00 53 74.55

12 20528 01 51 89.30

13 20541 01 51 73.30

14 20554 01 48 87.05

15 20566 00 45 72.05

16 20578 01 41 85.80

17 20591 01 41 70.80

18 20604 01 36 84.55

19 20616 01 38 68.55

20 20629 01 31 83.30

21 20641 01 31 88.30

22 20654 01 28 82.05

23 20666 01 28 67.05

24 20679 01 21 80.80

25 20691 00 20 85.80

26 20704 01 15 79.55

27 20716 00 15 64.55

28 20728 01 12 78.30

29 20741 01 10 63.30

30 20754 01 09 77.05

OSCAR 7

Orbit Time Long

Date No. Z W

1 10886 00 52 65.80

2 10879 01 47 79.81

3 10881 00 48 64.40

4 10894 01 40 78.11

5 10910 00 39 82.80

6 10929 01 34 76.91

7 10941 01 33 87.40

8 10954 01 27 75.11

9 10968 00 27 69.58

10 10979 01 21 75.81

11 10991 00 20 68.40

12 11004 01 15 72.11

13 11016 00 14 58.80

14 11028 01 08 79.23

15 11041 00 07 55.15

16 11054 01 02 69.11

17 11068 00 01 63.89

18 11079 00 55 67.61

19 11092 01 50 81.23

20 11104 01 49 66.11

21 11117 01 43 79.23

22 11129 01 43 64.61

23 11142 01 37 78.23

24 11154 01 36 83.11

25 11167 01 30 78.73

26 11179 00 30 81.61

27 11192 01 24 75.23

28 11204 00 22 69.11

29 11217 01 18 73.73

30 11229 01 17 58.61

COMMONWEALTH CONTEST 1977

A reminder is given that this contest will run from 1200Z Saturday, 12th March, to 1200Z Sunday, 13th March 1977.

Rules are as published in last month's AR. There are medals to be won by the VK winner and VK middle placing.

CONTESTS

Kevin Phillips, VK3AUQ
Box 67, East Melbourne, 3002

COUNTRY CALENDAR

March

- 5/6 ARRL DX Phone contest
 - 5/8 IOM CW contest
 - 12/13 RSGB Commonwealth Contest CW
 - 12/13 South Dakota QSO party
 - 12/14 Virgo a QSO party
 - 16/20 ARRL DX CW contest
 - 25/27 CO WW WPX SSB contest
 - 26/27 BARTG Spring RTTY
- ### April
- 2/3 Polish "SP" CW contest
 - 2/4 ARCI QRP contest
 - 12/13 DX VL to W/VE VL CW
 - 16/17 Bermuda contest
 - 16/17 Polish "SP" Phone contest
 - 16/17 ARRL CD CW party
 - 16/17 Florida QSO party
 - 23/24 ARRL CD phone party
 - 23/24 PACD DX contest
 - 23/24 "H23" contest
 - 26/27 DX VL to W/VE VL phone

Commonwealth Contest

Starts 1200 GMT March 12 and finishes 1200 GMT March 13. Eligibility is limited to RSGB residents in the UK and amateurs licensed to operate within the British Commonwealth in the "Home" Territories. Activity is on CW only, in the lower 30 kHz of each band. Exchange signal report only. Each QSO a worth 5 points with a bonus of 20 points for the first 3 contacts with each Commonwealth area.

Send logs to C. J. Andrews G3MKJ, 18 Downey Crescent, Uffculme, Exeter. Enq. and Logs to be received by May 15 to be eligible.

CO WW WPX SSB Contest

Starts 0000 GMT March 28 and finishes 2400 GMT March 29

Contacts between stations on different continents count 3 points on 14, 21 and 38 MHz, and 2 points on 7, 2.5 and 18 MHz. Contacts are permitted between stations in the same country for the purpose of obtaining a Prefix multiplier, but have no QSO point value. The multiplier is the number of Prefixes worked. Each Prefix may be claimed only once, not once per band.

Exchange RS report and a serial number starting at 001. Only 50 hours may be claimed for scoring. The 18 hours of non operation is taken in up to 5 periods. This is for single operators, who must show at least 12 hours operation to be eligible for awards. Multi operator stations must show at least 24 hours, with no time limit.

Mailing deadline is May 10th. Logs to go to CO WW WPX SSB Contest Committee, 14 Vandewater, Fort Washington, N.Y. 11090 USA.

POLSKA DX Contest

CW - April 2/3, and Phone on April 16/17. Starts 1500 GMT Saturday and finishes at 2400 GMT on Sunday

This year's contest has a few changes from past years. The contest is now on two weekends. Phone and CW each independent of each other. The districts (Powiaty) have been replaced by 49 Provinces (Wojewodztwa). The new abbreviation, two letters denoting the WOJ, will be sent in the exchange.

Exchange RS(T) and a 3 figure serial number starting at 001. Polish stations will send RS(T) and their WOJ, e.g. 578KA etc. Each QSO with an SP/SD/32 counts 3 points. Each different province worked counts as a multiplier but can only be claimed once, regardless of the number of bands used. (Maximum of 49)

Final score is the total QSO points times the number of Provinces worked. The same station may be worked on each band for QSO points, but only once for the WOJ.

Certificates will be awarded to the top scorers in each category and mode (i.e. single operator single and all band Multi operator all band only, and SWL), in each country and each class area of Australia, Canada, USA and USSR

Use a separate sheet for each band, and a summary sheet showing scoring and your name and address in block letters. The usual signed declaration is requested.

Entries must be postmarked no later than April 30 for CW and May 15 for Phone and on to PZK Contest Committee, P.O. Box 320, 00-550 Warszawa, Poland.

ARCI QRP Party

This 2000 GMT April 2, and finishes 0200 April 4. This contest is sponsored by the QRP Amateur Radio Club International, and this activity is open to all Amateurs. Stations may be worked once per band for QSO and multiplier credit. Exchange RS(T) and state, province or country. Members will include their QRP number, non members their power input. Contacts with a member count 3 points, and non members count 2 points. Stations other than W/VE 4 points. Each State, province or country worked on each band counts as a multiplier. There is also a power multiplier as follows: Over 100 watts used x 1; 15 to 100 watts, x 1.5; 15 to 25 watts x 2; 1 to 15 watts x 3 and less than 1 watt x 5

Final score is QSO points x States, provinces and countries per band x the power multiplier. Frequencies CW - 3540, 7040, 14065, 21040, 28040. SSB - 3655, 7260, 14260, 28060 (21360?). Include a summary sheet with your entry with a breakdown of scoring, bands used, equipment, antennas and power used. Your name and address in block letters and the usual signed declaration. Logs must be received before May 30 and go to E. V. "Sandy" Blaize, W5TVW, 417 Ridgewood Drive, Metairie, LA 70001.

20 YEARS AGO

Ron Fisher, VK3OM

The first transistors transmitter to be featured in Amateur Radio was described by Hans Albrecht VK3AKH, in the March 1957 issue. Perhaps the term "transmitter" might have been a little ambiguous as the unit was little more than an oscillator built into a match box. Hans claimed an output of 1.65 milliwatts. It was however a starting point. In a second article in the same issue Hans described his experiments stabilising transistor oscillators.

"Meet Donald Duck" by Stan Bourke was not a description of a guided tour of Disney Land but an introduction to the benefits of single sideband. While SSB activity was slowly increasing, most of the big AM boys were still sure it was just a passing fad.

Television DX reception made big news in the newspapers of those days especially when the BBC (London) was received by two WVL's in Sydney. Norm Burton received the sound carrier on 41.5 MHz with his modified SX 28 receiver. George Palmer of Melbourne also heard the sound carrier on both an English TV receiver and also with a converter into a communications receiver. In both cases no picture was received. A low power transmitter or exciter for two metres using a 6V6/6X6/8W6 or driving a 2E26 in the final designed by K. Mitchell, VK2ANU, was also featured in March 1957 Amateur Radio.

Other articles were, "Combining TV and 12V Filament Operation" by Norm VK6ZAA, and "A Suggested New Reception Report System" by YG3RD. It seems that most reporting systems evolve rather than just appear and it would appear that YG3RD's system has disappeared.

"Subduing That Over Modulation and Increase Your Readability" or how to apply negative peak clipping to an AM transmitter Bud Pounsett VK2AQJ showed you how to do it. The Federal Executive Editorial page told readers just how a Federal Convention is arranged. With a Convention held in Melbourne the following month, they no doubt hoped to raise more interest and support for this.

LARA

Ladies Amateur Radio Association

"DOINGS AND WANDERINGS"

For this month, we will take a look at the activities of some LARA members over the summer. Wanderings include Norma VK3AYL who set off for a golden holiday in New Zealand in December and hasn't been heard of since. She is meeting some

members of WARO on her travels and has probably joined in their skeds. VL activity in 2L is quite widespread and WARO membership lists include a large number of licensed VL's.

So much for the international scene. If Norma hasn't fallen into a fjord or off a volcano we expect to see her back to teach the Novice classes in the new trials. Interstate trials include Myra VK5VM, who visited VK3 in late January. She met some of the VK3 LARA members who know her as the net control on the LARA skeds. Unfortunately there wasn't time to organise a formal meeting for the occasion.

Doings amongst members over the month of course include that enthralling activity examining. Some of us enjoy this so much that we do it again and again. Anyway best of luck for those awaiting results this year.

Doings on the organisational side in the month have included steps towards the first 1977 newsletter edition. Contributors from members will, of course, be warmly welcomed. Members are asked to return copies of the newsletter in the last edition as a vote in the national meeting. A list of coming events is a possibility in the newsletter if people will let us know when, what and where.

Finally, mention should be made of all the doings and wanderings of members locally in each area. Most of us are quite busy enough and it is always a shock to find another month going each time a meeting comes around, but not to worry, just come up on the sked and share your troubles.

33's LARA

AWARDS COLUMN

Brian Austin, VK5CA

P.O. Box 7A, Craters SA 5152

WAS AWARD (BERMUDA)

- 1 The award is available to licensed amateurs.
- 2 QSL cards must be submitted with the application.
- 3 There is no fee.
- 4 Address for applicants is —

Awards Manager
Radio Society of Bermuda,
Post Box 275
Hamilton Bermuda

Rules. Contacts made during the annual Bermuda contest may be claimed for credit without submission of QSL cards provided that —

- 1 the applicant has submitted a valid contact log, and
- 2 application is made within one year of the contest.

Only one mobile or portable station may be claimed for credit.

The award is held in Pembroke Parish and not Hamilton Parish.

Requirements. One confirmed contact is required with each of the nine Parishes.

1977 CAPE TOWN FESTIVAL AWARD

The award is available to all licensed amateur contacts made during the period 0000 SAST 2nd April 1977 to 2400 SAST 30th April 1977. Stations are required to work ZS1CTF or ZS1CTM plus 2 other ZS1 stations. QSL cards are not required for this award. Submit an extract of your log certified as being correct by either your local awards manager or two licensed amateurs in mode or combination of modes may be used. Any band or combinations of bands may be used. Closing date for applications is 31st July 1977. Certificates will be posted after this date on a fee for the award is SA Rand 100 or US\$200. A special endorsement will be awarded for W/VE contacts. This may be applied for as an additional award. Applications should be addressed to

Derek S. egei ZS1DP
SARL CT Branch
P.O. Box 5100
Cape Town 8000 South Africa

QSP

NEW PREFIX

The ITU announce the provisional allocation of the call sign series SBAA—SBZZ to the Transami in response to a request by the Republic of S. Africa. Radio Communicator on January 77

BEACONS

It is interesting to note the beacon situation in the UK as published in Radio Communication (November '76) and IARU Region 1 News. The listing show the following—

Band	Number	Remarks
29 MHz	1	GB3SK rest of world; 28.155 MHz to 28.195 MHz
70 MHz	2	In G land*
144 MHz	4	In G land*
432 MHz	2	In G land*
1296 MHz	1	In G land*
	2	G licensed
2300 MHz	1	licensed in G.
3456 MHz	1	licensed in G.
12 GHz	2	In G land* plus 1 licensed

* Means operational.

HAMADS

- Eight lines free to all WIA members. 50 p.p. 3 cm for non-members
- Copy in typescript please or in block letters to P.O. Box 150, Toorak, Vic. 3142
- Commercial advertising is excluded.
- Closing date, 1st day of the month preceding publication. Cancellations received after 12th of the month cannot be processed
- QTHR means the advertiser's name and address are correct in the current WIA Radio Amateurs Call Book

FOR SALE

Black Cleanout: HQ, coil sets 480 kHz to 400 MHz, VFO 3.4-3.7 MHz; Command Rx 3-6 and 8-9 MHz, Tx 3-4 and 4.5-5.3 MHz, R11244 Rx, Bendix TA12 Tx, BODAS VHF Rx, Kial cal. No. 10, matrix 742 VTVM CW VHF probe, Palco VCT; Loran APN4 Rx and indicator relays 12, 24, 48, 240 vol. many other components incl. VAR caps etc. Best offers accepted. VK3BAX QTHR (003) 45 3002 (priv) (031) 698 5363 (bus).

Lafayette KT320: general coverage Rx with manual, goes well, 585 Ken KP202, hand-held 2 m transceiver with repeaters 2, 6 and 8 Simplex 'A' 40 and 50 Nicads and charger, manual, \$140. All offers considered. VK3BAX QTHR Ph. (082) 9 5948 bus, (052) 9 7401 A.H.

Enlist late VK2YB: Hansen TV circuit tester, capable of 705 A/DC V, 17,500 V EHT, mA, resistance, output meter, capacitance, inductance, RF indicator, tube GM test and transistor testing etc. \$15, plus any delivery cost. Contact VK2QL, QTHR.

AWA 125 KVA Auto 240 V line transformer, 510 plus freight. Power transformer 220/260 V input 1250 V output tapped at 500, 750, 1000 V rated at 250 mA, \$10 plus freight. Core held by 3/4" angle iron and bolted. ART d'al and ganged condensers. Best offer VK2QL QTHR

Microwave Dish Antenna 3 ft diameter: aluminium mesh construction with centre feed mounting, commercial manufacture, good condition, ideal for Dx or satellite reception \$30 or offer R. Brown, Sydney, Ph. (02) 638 2900

FT auto with home made PS, speaker, all 10 m x10 in working order, may be improved by tuning, \$295 MFJ Super Logarithmic Speech Processor LSP 520 BX see QST, \$49 VK2BML QTHR Ph. (02) 771 1657 A.H.

Two Barlow Wadley Rx under warranty: One faulty, \$175, the other \$200. D. Deerman 222 Parry Street, Charlottesville, Qld. 4470

Teletype ASR 3S heavy duty model, ASCH, in exc. cond. with all manuals, service log, tape and paper, \$365 Icom IC20, exc. cond., ch. 2, 6, 8 rep. and ch. 40 and 50 simplex, \$130 Asahi 5/8th 2 m whip and car mount \$15 Simon Rosenbaum VK3ZUI, Ph. (03) 51 1156 A.H.

Morse Cassettes: C60's with 12 ITU standard speeds, 5, 6, 7, 8, 9, 10, 11, 12 words per minute, practice before exams to (past exams) standards Contact Peter Dodd, Fed Exec. Office

Cubical Quad 7'9" boom, 1" wood down spreaders. Can be used to make a 144 MHz "BL mini-quad" or supply details to copy high gain 3 band quad. Any reasonable offer near M40, Gsone VK3ZR, A.H. (03) 89 4645.

Alfies 168, mks, 2 batt. loads, little used \$A350. G whip helical 10 m to 80, 300 2 m FM digital II, VK version, as new, \$250, P25K, Box 840, Rabaul, PNG

Heath SB500: 2 metre SSB transceiver, 140 W PEP 2 x 6145B's with 10m input/output, \$175, little use condition, had very little use. Poly-comm 2 144-148 AM tunable transceiver with built-in separable Tx and Rx VFO's and super sensitive Rx with squelch, effective NL Tx easily convertible to FM, Rx copies FM FB Inbuilt AC/DC power supplies, \$135 VK3RGW, L. Kubis, QTHR, Ph. (03) 561 3555 (bus.) (03) 232 6268 (A.H.)

FT101 10 to 300 m, KP205 with nicads, charger and crystals, RPT 2, 4, 6, 8, ch. 40, 50 and manual. Offers to VK3VL, QTHR.

WANTED

For 4CX250 Lissens, blowers, sockets and chimneys, items to make up 3 sets for VHF VK7MC, P.O. Box 52, Sorrell, Tas. 7172

Compact Linear Amp, 400 W PEP for HF Dx bands, in good order. For details and price to Gsone VK3ZR, A.H. 89 4645.

36-10 m Transmitter or transceiver, good condition, 12 V DC operation essential, 240 AC desirable VK2BL, QTHR Ph. (062) 81 6945

144 MHz/28 MHz Transceiver, valve or solid state, 432 MHz-1296 MHz equipment, must be GWO, reasonable price please. Help a VHF unit to get back on the air! VK3AWD, 32 Lachlanhead Drive, Tullamarine, 3043, Ph. (03) 338 8475

Set of coils for Lafayette to GDO, model TE-18, VK2NBE, 2/10 Bligh St, Wollongong, N.S.W., 2500

Amateur making comeback urgently wants SSB transmitter or SSB transceiver Yaesu, Kenwood, Drake, Swan, Collins! What have you? Pay good price for good gear. VK3RW, Box 97, St. Ives, 2075 or Ph. (02) 44 7701

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SILENT KEYS

It is with deep regret that we record the passing of —

Mr. C. CASE
Mr. C. R. McNALLY

VK3ACE
VK3CE

IVOR MORGAN — VK3DH

January 4th 1977 was a sad day for the radio fraternity when it learned of the sudden death at his home of one of Australia's best known and popular amateurs — Ivor Morgan VK3DH.

Although officially retired, Ivor was still working at the HSV-7 transmitter on relieving duties with no hint of any trouble. He had, in fact, taken part in the regular mid-morning chat on 7 MHz with his radio friends and other sign off had come in to have a cup of tea with his wife when he collapsed.

Ivor operated a superb station with a complete Collins "B" line on all HF bands, even his car was equipped with an Alfie 210 mobile set which he used extensively whilst travelling to and from the HSV transmitter on Mt. Dandenong.

VK3DH was well known for activities associated with the Pacific DX net on 10 metres, as well as taking the call-back after the WIA broadcasts on Sunday mornings on 3.5 MHz. Ivor was a Vic-Div WIA councillor and liaison member with Community Radio 3CR. As secretary of the "Old Timers" association, he was busy with the final arrangements for the annual dinner to be held on March 10th.

Ivor was never idle, radio was his livelihood as well as his hobby and he had a stream of friends and others seeking his advice which was always so freely given.

VK3DH was first licensed in March 1930 and commenced transmission in the then popular 200 metre band with experimental musical broadcasts on Sundays. Even as a schoolboy, Ivor acquired an interest in radio and constructed his own equipment. His first job was in the radio department of a large store in Melbourne and he followed that vocation ever since, having his own shop at one stage.

As commercial broadcasting developed, Ivor took a keen interest in this field and obtained his Broadcast Operator's Certificate in 1936 and worked with Ray Sherwell (SBF) on the installation of a new transmitter at 3BR Shepparton. He subsequently joined 3AW in Melbourne and was A/g Chief Engineer during the war period. With the advent of television he obtained his Television Operator's certificate and joined HSV where he worked until the end. The Radio World has lost a vibrant and enthusiastic member and was represented by a very large gathering at St. John's Church of England, Camberwell, in a tribute to Ivor's wife, Elsie, and two sons, Vincent and Christopher.

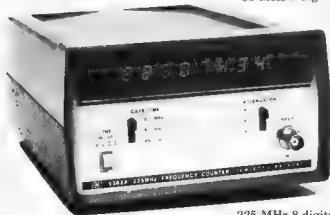
All Kerr VK3JQ.



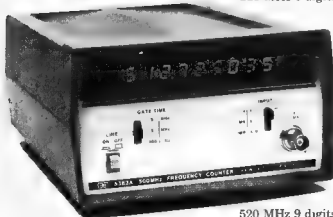
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THE

WA BULLETIN

WEST AUSTRALIAN SUPPLEMENT TO "AMATEUR RADIO"

MARCH 1977

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Air Chief Marshall

Sir Wallace Kyle, G.C.B., C.B.E., D.S.O., D.F.C., K.St.John

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	R. GREENAWAY	VK6DA	242909
	L. A. BAXTER	L60213	493335

All material for inclusion in The Bulletin to reach the Editors by phone, on air, or mail to : 22 Salisbury St., Leederville, W.A. 6007 before the 10th. of each month.

CORRESPONDENCE All other correspondence should be addressed to:-

Hon Secretary W.I.A. (W.A. Division)

P.O. Box N1002

G.P.O.

PERTH W.A. 6001

DIVISIONAL NEWS BROADCASTS VK6WI

News material assembled and broadcast originated by

Don Reimann - Phone 871103

SUNDAY

0130 Hrs U.T.

80 Metres	SSB	3600 KHz.
40 Metres	SSB	7080 KHz.
20 Metres	SSB	14100 KHz.
6 Metres	FM	52.656 MHz.
2 Metres	FM	Channel 2 Repeater

GENERAL MEETING

Held on the THIRD Tuesday of every month at 1945 Hours at Science House, 10 Hooper St., West Perth.

COUNCIL MEETING

Held at the QTH of the Secretary, 388 Huntriss Rd., Woodlands on the LAST TUESDAY of each month at 1930 hours.

W.I.A. (W.A. DIVISION) ANNUAL GENERAL MEETING

TUESDAY 19th. APRIL 1977 at SCIENCE HOUSE

NEW MEMBERS

A Big welcome to the following new members to the W.I.A.
Don Lancaster L60280
John Lloyd L60281
Bruce Headland-Thomas VK600
Mark Dunning VK6ZDN
Hubert Neuwissen VK6ME

According to the January Computer Sheet our Membership figures are as follows;

Full members	263
Associate Members	66
Pensioner, Student & Club	34
Life Members	<u>5</u>
TOTAL MEMBERSHIP	363

Also our Electronic Marvel tells us that of this total number there are 143 that have NOT yet paid their membership subscription. If YOU are in this number what about doing something about it PLEASE PAY UP THOSE SUBSCRIPTIONS IMMEDIATELY.

CHANGE OF ADDRESS

Please advise Dave Wallace of your change of address, and any Callsign alterations. Membership enquiries should also be forwarded to Dave on 413655.

NOVICE CORNER

Dave Wallace is in the process of compiling an information sheet on Novice Callsigns so that this will be available for any new Novices to ascertain what other members are in his area and also what channels on what bands they have available to them. This will be a great help in deciding what crystals to obtain and the new member will not be caught in buying a crystal for a channel that is not being used in his area.

However, in order for this system to be of any use, Dave must have certain information from EVERY Novice Callsign. The info that he needs is ;-

NAME

CALLSIGN

LOCATION - Suburb only is all that is needed here

CRYSTAL LOCKED CHANNELS AVAILABLE ON 80 - 15 - 11 Metres

Dave would also like to point out that this is NOT a drive or gimmick to gain new members to the W.I.A. so if you know of a Novice Call that is not a member, please ask him to forward this information on as it will be of great help to all Novice calls in VK6

PRESIDENT'S NOTES

I would like all members to remember that the Annual General Meeting of the W.I.A. (W.A. Division) will be held on Tuesday 19th. April 1977 and it is in our best interests that we have a full attendance of members at this meeting. This has been advertised in the Bulletin for many months so you should all have it clearly marked on your Calendar.

Don't forget to get those Nominations in prior to this Meeting. Nomination forms were printed in the January edition of The Bulletin but if you cannot find your copy it can be written out on a normal sheet of paper.

Alan VK6MA

GET WELL WISHES FOR VK6DA

We are sorry to note that Ross VK6DA is at the moment recovering from a visit to Hospital where he underwent surgical treatment. At the time of writing it was reported that he was progressing well and already giving the XYL and Harmonics plenty of "helpful advice" (?????????) This sounds as though he is quickly heading back to Strength 9.

All members of the W.I.A. wish Ross a speedy recovery and sincerely hope that it will not be very long before he is back on the bands again.

(PS. We will also be pleased to see him back on this &£\$%"& typewriter. Editors)

JOHN MOYLE MEMORIAL FIELD DAY

At the time that this edition went to press the John Moyle Memorial Field day was in progress and our spies have informed us that there is a very good attendance at Wireless Hill where they have erected one mast with a Triband Beam and Dipoles for 80 M and 40 M. The other mast is equiped with antennas for 432 MHz, 144 MHz and 52MHz.

They have been at work for many hours getting everything ready and we hope that their efforts will not be in vain. No doubt we will have a full report for the next issue.

We all wish them the best of luck in the contest.

S.W.L. CORNER by MARK THREE

This corner is fast drying up for the lack of news from other SWL 's in the state. What about it, you fellows!!!! Since John gained his callsign I have not heard from anyone and I find it nearly impossible to write this every month without some help. Even a few notes would help.

After the verbal display on Sunday 6th. February it is highly possible that there will not be a rush of SWL's wishing to join the W.I.A. Surely an opinion can be given rightly or wrongly without the silly and childish display given by the first caller on the Callback. This does little to encourage SWL's or others, for that matter to become members.

Welcome back Don and again many thanks for your most interesting News Broadcasts and we all trust and hope that you have completely recovered from your illness. Whilst on the subject of News Broadcasts we must not forget the stirring job done by VK6PM in Don's absence. Believe me, this was greatly appreciated by all of us and after all the trouble that I have getting notes I can well imagine his problems. Once again, our thanks for a job well done.

In the December issue mention was made of "peace and good will" but listening around on 2 metres there is no indication that brotherhood exists between a few users (pests could be more in line with their way of thinking) Surely consideration for others would solve much of the unpleasantness at present prevailing.

How many read Pages 4 and 5 of the January issue of the Bulletin and really thought about it because it does make a lot of sense.

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HAVE YOU PUT IN THAT NOMINATION FOR COUNCIL MEMBERS?????????????
IF NOT YOU HAD BETTER HURRY. THE ANNUAL GENERAL MEETING IS NOT FAR AWAY. REMEMBER --- TUESDAY 19th. APRIL 1977

VHF NOTES.

The big news for January was Wally _VK6WG working Adelaide on 1296 MHS.

This contact looks like being a world record.

Six Metres has been quite.

Two Metres is still turning on widespread DX.

The SSB early morning skeds between Perth and Albany are producing a success rate of around 75%.

70cm is proving more difficult over this path.

The Kalgoorlie Repeater VK6RAK has been worked from Perth and Wagin with noise free signals allround.

The Mount Barker Repeater VK6RAA has been worked from Perth most mornings, even Gary VK6GS worked VK6RAA while in Perth from his hotel room.

Where are the Perth Amateurs.

Very good openings are still going strong from Albany to the East. Will VK6UU.

R.D. CONTEST.

Dear Allen,

I have been concerned for some time by the lack of participation by VK6 amateurs in the RD Contest and wish to put forward a proposal to the VK6 Division which I feel may assist.

The ideas are not new but I consider them worth serious thought.

Firstly I feel that the VK6 Division should put up a trophy (or trophy's) for the highest pointscorers in VK6 during the contest.

The trophy's could either be perpetual or annual for the highest pointscorers as published in AR this proves that the log has indeed been submitted to the Federal Contest Manager.

I have already suggested to the VHF Group that they consider a trophy for the highest pointscore on the VHF bands and this, I understand, will receive consideration at an early date.

Secondly a concerted effort should be put in to get a greater participation by all amateurs.

My suggestion is that at least a few months before the contest a special co-ordinator should be appointed together with zone co-ordinators who are responsible for a limited geographical area.

The greatest number of amateurs possible should be circularised before the event explaining why we feel that they should make the effort to participate.

The zone co-ordinators should subsequently endeavour to make personal contact with these amateurs and follow up afterwards to collect the logs for submission in bulk to the Contest Manager.

This will of course mean some work for the co-ordinators but if the geographical areas are small it should not be too bad.

I for one am willing to assist in this matter and no doubt others will also come forward.

Other radio clubs should be approached and their support solicited. As previously mentioned I have already approached the VHF Group in this regard.

I realise that a lot of VK6 amateurs, including my self, are disgusted with the current pointscore table but this should not stop us from making every effort to do our best.

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Possibly the greater use of VHF should be encouraged as in this way all points stay in the State instead of us giving away more points than we score ourselves.

If you consider this idea has merit i am willing to draw up a more detailed plan of campaign for submission at a later date.

Yours Truly

G.BYASS VK6BY.

(Editors Note!!!!

This letter has been dealt with by the Council and Graeme has been asked to submit a " more detailed plan" and we hope that everyone will assist him ,or those responsible, in making 1977 R. D. Contest a real beauty.)

BITS AND PIECES

Did you hear about the youn American lad who decided to wag school and spend the afternoon fishing. Of course he took along his CB unit. Teacher came to hear of it and borrowed one off another student. A few words were passed and shortly afterwards a very timid youngster returned to class.

TECHNICIAN
ASSISTANT

Do you know what a duodecimal is?
No. But claim compo on it anyway.

ELECTRICIAN

Hey Jack! See those two wires down there. Grab hold of one of them for me will you.

ASSISTANT

O. K. I've got one.

ELECTRICIAN

Do you feel anything?

ASSISTANT

No.

ELECTRICIAN

Well for heavens sake don't touch the other one.
There is 3000 volts on it.

XYL called from

Alan was high on the ladder fixing the beam...when his below.

beam?"

"Alan," she called, "Have you got a good grip on that

"Firm enough," said Alan. "Why?"

ladder away."

"Hang on then," yelled the XYL. "I'm going to move the

" At last I've cured my OM from staying out in the Radio Shack untill the small hours of the morning" she stated.

"Oh! What did you do?"

"When I heard him fumbling downstairs I yelled "Is that you, Harold?"

" And that cured him?"

"It certainly did. His name is Charles."

All right! So you don't like the corny jokes?

Well what about giving us those technical articles we so badly need to print. If not this type then what about any other articles that would be of interest to other readers. It couldn't be worse than the preceeding article.

XYL CORNER

(Thats right. A complete blank!:. What happened to all those XYL's who were going to assit. We didn' even get a recip to print. Come on Girls!!!!!! Don't let the men have it all their own way.)

MORSE CODE PRACTICE

A few more groups for you to have some practice with. We suggest that you record them on tape then they can be played back later to decide how you went. They are in blocks of 5 letters which can be sent horizontal or vertical (No. Not you - the lines of letters you clot) Also you can time yourself by sending them as a word group but DON'T forget that spacing

A S C T H	A D K O M	O P E F T	R E I S H	D F G H J
V N Y U K	S W Q Y P	V F E T H	A X T Z Y	F T B H L
Q F J R C	T H M K U	C D W Z G	Q S C V G	A X E F L
E F B T X	Y J M S Q	Q Y V D J	X Y P S Q	S E H I J
W V F H U	Z C R G N	Q W W T J	R E D J L	A Q X C T

R T Y U I	A S D F G	Z X C V B	L K J H G	P O I U Y
G F D S A	Y T R E W	M N B V C	D F G H J	C V B N M
A Z Q S C	X W D C E	E F V R G	Y H N U M	U J M I K
Q A W Z S	S E X D R	C F T V G	T V G Y P	H U N J I
M K O L P	Q Z W X E	D R V T B	G Y N U M	P L H G X

1 2 3 4 5	5 6 7 8 9	0 2 4 6 8	1 9 2 0 7	3 5 8 0 2
3 4 0 9 1	6 8 9 4 3	7 4 8 5 0	4 1 7 6 9	3 6 9 2 4
4 7 1 0 5	5 4 3 2 1	0 9 8 7 6	0 0 3 5 5	2 3 3 9 6
7 8 8 3 1	9 6 4 4 1	6 5 4 0 2	5 5 6 7 5	4 9 4 2 8
1 0 7 2 3	7 6 4 3 0	6 8 3 9 1	2 8 3 9 4	4 0 4 7 5

W D 6 T L	V K 6 S P	Q 4 I D 7	4 D T 8 0	Q P 0 J M
1 4 T H 7	Y 6 U 8 I	T 4 6 Z P	H U 8 9 L	Q T 7 2 X
Y B 5 U 7	M N 0 W J	7 8 M N 1	6 J 5 L 3	5 F 7 L 3
Z H Q 7 Y	S 5 R 9 T	H I 9 S 6	E 1 R F K	7 4 V D P
U 6 A 8 B	2 C 6 N 8	C S H 3 4	D B V 8 K	Q S L 7 3

F O U N D	W O R L D	S I N C E	B U I L D	P E T E R
1 9 2 8 3	6 5 4 7 3	0 4 7 9 0	1 2 3 4 5	9 8 7 6 3
J O H N S	B E I N G	F L I N T	S C R A M	Q T H R S
W E N T 6	7 Q R X 9	Q S P 4 5	Q R M 5 9	Q S Y 5 K
R O G E R	T H O M A	E S T H E	U N C L E	F I N A L